# NetworkWord

Conrad; Compaq VP Pushard now eyes switch and remote access partner

ENTERPRISE NETWORK

CUSTOMERS SOUND OFF

# It's win, lose and draw for Novell

By Kevin Fogarty

Moses Sun has been a loyal NetWare customer for years. A Certified Novell Engineer and Certified Novell Instructor, he makes his living supporting a 20-server NetWare net for the

Ocean Drilling Program at Texas A&M University.

But Sun is losing faith in Novell, Inc., which has dropped products unexpectedly and has repeatedly revamped its strategy. Despite the grand plan Novell trotted out last month to focus on network software integration, Sun said he will probably look elsewhere.

"Novell has this basic credi-See Novell, page 66



Novell can now move faster in hitting key goals for customers, says The Limited's Smart.



Texas A&M's Sun questions Novell's credibility and will be looking elsewhere for products.



Mafale of ITT Hartford Insurance isn't convinced, but he'll give Novell a chance to prove itself.

# Digital, Novell buck up their LAN managers

New tools and product enhancements make it easier to control desktops and servers.

By Jim Duffy and Kevin Fogarty

Digital Equipment Corp. and Novell, Inc. will hit head-on this week when they roll out competing products for desktop and server management.

Digital will introduce Client-



- A detailed primer on network management
- A look at Digital's ManageWorks application
- A comparison of management apps

To access: Point your Web browser at http://www.nwfusion.com. From the main menu, select News+ then Front Page. | to register a discernible pulse?

Works and ServerWorks, two ware and software configurapackages that let users monitor net connections, as well as hard-

tions on LAN clients and servers. See Managers, page 67

# Wireless data vendors bundle up against the cold

**By Joanie Wexler** 

Atlanta

Unsettled standards, a scarcity of applications, glaring network coverage gaps, hefty costs.

When you add it all up, is it anywonder that the wireless data communications market has yet

Phil Schultz says wireless projects, such as the one he directs for Chicago trading groups, need vendors' help.

But wait: Vendors are now on a new kick to eliminate these mobile computing handicaps and win the confidence of skeptics. They are bundling devices, applications and network services for vertical industries that carry a predictable monthly price tag.

The point of all this is to remove the expensive and cumbersome integration work that has deterred scores of users from

See Wireless, page 10

# Sprint to span the globe with IP net

AT&T equipment

unit to link PBXs

with switched LANs.

Page 68.

By Tim Greene and Rob Guth

Sprint International will roll out a series of IP access nodes across the globe that could streamline Internet traffic, the carrier will announce next week.

The nodes, slated to be in place by year-end, will help increase the speed at which traffic traverses Sprint's private Global SprintLink

the public Internet.

The carrier claims that this will increase reliability because the new sites are part of the Sprint managed backbone that features redundant routing.

> Data will also get where it is going faster because it will spend less time on the public Internet and more time on Sprint's net, which the carrier claims is

and boost the locations from more efficient. Instead of jumpwhich it can hand IP data off to ing onto the public Internet at See Sprint, page 68

### INTERNATIONAL FLAVOR

Sprint will offer users direct access to Global SprintLink at overseas locations so customers don't have to lease their own lines to nodes in the U.S.



Links are initially E-1 at 2M bit/sec but will be upgraded to E-3 at 35M bit/sec when demand requires.

# FCC rocks frame relay users

By David Rohde and Tim Greene

Washington, D.C.

Companies seeking aggressive frame relay prices may have to overhaul their negotiation strategies as a result of an FCC ruling handed down last week.

For the first time, the Federal Communications Commission ordered interexchange carriers (IXC) to file tariffs for their basic frame relay services. The move sparked immediate concern that frame relay customers would now be subject to the copycat pricing and periodic price hikes typical of most other tariffed services.

Until now, IXCs have been free to negotiate frame relay prices with individual customers, although carriers usually publish nonbinding price sheets analogous to equipment list prices.

See FCC, page 66

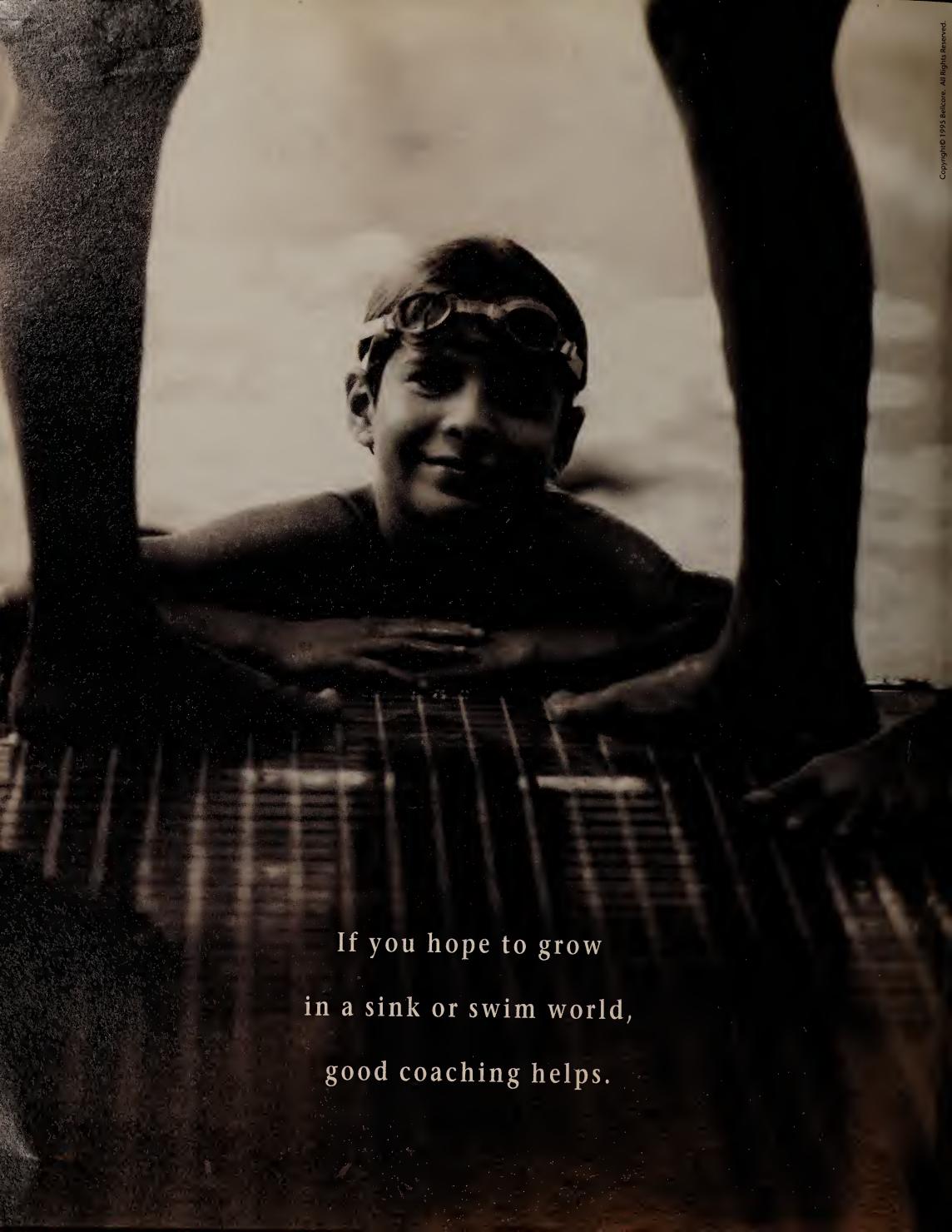
# **NEW RULES HIT FRAME RELAY**

"We...require AT&T to unbundle and file with the commission a tariff for basic frame relay service within 60 days...and all other facilities-based common carriers to tariff their basic frame relay service."

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Access Network World Fusion using the number in yellow. See page 5 for details. NEWSPAPER \$5.00

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### Week This

Go on-line to learn more about the top stories In this Issue. Aim your browser at http://www.nwfusion.com for these highlights and more.



## News+

### The Front Page:

- Tap into reports on an effort to develop a wireless data net in the Bay area.
- Compare Sprint's planned Internet service with those of other large phone companies.

### **The Technical Sections:**

- Delve into an Ernst & Young report on how workflow Is helping customers make money, not just cut costs, in Client/Server Applications.
- Read up on how vendors are putting entire multimedia networks on single chips, in Local Networks.

### **Industry Watch:**

Curt Monash tells how to cut through the hype to know what vendors are really saying.



Your side: The Help Desk is open for business.



Bone up on channel-attached gateways through articles, charts and white papers. Select Technology **Resources then Mainframe Communications.** 

Make moving to electronic data interchange easier. The Data Interchange Standards Association site carries the latest news on the migration from X12 to EDIFACT at http://www.disa.org.

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# **NetworkWorld**

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## News

- **Department of Defense shoots down** traditional SONET purchasing methods.
- **Oracle will buddy-up** with firewall providers to give users better security over the Internet.
- AT&T is looking to bid farewell to its Paradyne subsidiary, which makes modems, chipsets and DSU/CSUs.
- Big Blue partners with tool vendors to ease design and management of data warehouses.

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**NetworkWorld's** Mission: To provide news and analysis that help network IS professionals deliver the network computing infrastructure and distributed applications required to meet evolving business needs.

# News briefs, October 23, 1995

## Internet trick or treat.

Next week at the Internet World conference in Boston, a horde of cybervendors will offer up a bag of treats on the 'Net, just in time for Halloween. IBM is expected to unveil new Web features for its Lotus Development Corp. products, while GE Information Services, Inc. will introduce its first X.12 electronic data interchange software that works over the Internet.

Separately, The Wollongong Group, Inc. will unveil a version of its Emissary desktop software that integrates two security protocols - Microsoft Corp.'s Private Communication Technology and Netscape Communications Corp.'s Secure Sockets Layer — to save data from the clutches of 'Net goblins. Scary!

### Digital art on display.

■ The National Gallery of Art in Washington, D.C. next week will open to the public the new MicroGallery, its permanent collection stored on computer as digital art. Via simple touch screens, visitors will be able to rapidly search high-quality art images, select their favorite works - complete with their current museum location and then print out their own through the National Gallery collection.



On-line pages, such as this one detailing the work of Gare Saint-Lazare, guide users

personal walking tour through the museum. The MicroGallery project, three years in the works, was funded by American Express Corp.

# Management forum gets to the point.

■ The Network Management Forum is readying a second rendition of specifications for telecommunications network management. OMNIPoint 2 will be made up of Solution Sets documents that describe how to conduct standards-based performance management, switch reconfiguration and trouble-ticketing — as well as Component Sets, which describe the tools needed for various Solution Sets. OMNIPoint 2 will be officially announced Oct. 31, a forum spokesman said.

## **Informix studying up on Stanford?**

■ Informix Software, Inc. in Menlo Park, Calif., is reportedly gearing up to acquire on-line analytical processing (OLAP) tool vendor Stanford Technology Group, Inc., based in San Francisco. Informix declined comment, but analysts said the acquisition could bolster the database company's data warehousing strategy. Rival Oracle Corp. acquired IRI Software, Inc. earlier this year for its OLAP tools, and Sybase, Inc. is beta-testing its own warehouse offering.

## Novell admits to crack in mirroring software.

■ Novell, Inc. officials scrambled last week to correct a manufacturing defect that could reflect badly on its server-mirroring product. A batch of about 5,000 versions of NetWare SFTIII for NetWare 4.I was produced with the licenses set to allow only one userat a time, rather than 100.

Only 25 or so went out to customers, eight of whom have had the crack patched. The rest of the batch either never shipped or went out as two-user versions in software developer kits. Novell is looking for about 16 bad-batch buyers who have not registered the product.

# New ways into frame relay

MCI Communications Corp. last week announced several new options for remote access into frame relay networks. As expected, the carrier introduced switched digital access at speeds of 56K and 64K bit/sec as a backup to dedicated access circuits.

In other new options, HyperStream Remote LAN Dial supports the V.34 modem and V.42bis compression standards for highspeed analog connections. HyperStream Telnet Connect supports remote terminal-to-host access to frame relay-connected LANs, while a separate option offers frame relay connectivity from X.25-connected LANs from more than 40 countries.

# **Compaq captures Thomas-Conrad**

Acquisition signals Compag's intention to become a more complete network provider.

### By Jodi Cohen

Houston

Compaq Computer dipped its toes a little farther into the internetworking waters last week with the acquisition of hub and network adapter card provider Thomas-Conrad Corp. for an undisclosed sum.

The server market leader's first buyout is one more sign that it may be ready to make a big splash in the enterprise internetworking pool.

In conjunction with the purchase, Compaq launched its Internetworking Products Group (IPG), headed up by vice president Doug Pushard. He said IPG will oversee Compaq's vision of the server as the logical place to integrate and manage

multiple network technologies.

Compaq's efforts in this area include designing a LAN switch with a partner that Pushard would not name, but some observers believe it is NetWorth, Inc.

Pushard also said Compaq is talking to Pushard sees the server Novell, Inc., Microsoft as the logical place to Corp. and others about meld multiple network servers and PCs. melding remote LAN technologies. access technology into its servers.

Compaq expects to announce partnerships — not acquisitions — in both technology areas, according to Pushard.

The company already has unveiled a partnership with Cisco Systems, Inc. to combine Cisco's Internetwork Operating System routing technology software with Compaq's servers and management software (NW, July 3, page 6).

### Merger, Texas style

Compaq's foray into the hub space came as no surprise to industry observers, given that the server giant has previously voiced its intention to integrate key networking components into its servers (NW, Jan. 30, page 1).

But Compag's choice of Thomas-Conrad — a relatively unknown network equipment vendor from Austin, Texas, that posted \$55 million in revenue last year and has yet to enter the switching market — surprised some observers.

"I thought Compaq would have picked someone more along the lines of NetWorth which was the rumored acquisition — because it would have

100Base-T repeater technology already shipping and some hot-switching technology," said Tom Bain,

Compaq teams with

Digital, Microsoft

and Tandem to prime

its servers for

enterprise nets.

See page 25.

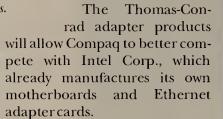
an analyst at META Group, Inc. in Reston, Va.

Thomas-Conrad offers Compaq a full line of net adapter cards and hubs, as well as complementary management software (see graphic). Highspeed, low-cost adapters and 100M bit/sec repeater

products are in the pipeline.

Compaq initially will sell the Thomas-Conrad gear separately from its servers.

> Down the road, Compaq could build hub cards into its servers, observers said. Both analysts and users pointed out that the acquisition also gives motherboard of its



"I'm happy to see that another vendor making its own motherboards will have the potential to integrate adapters right on the board," said Eric Gasior, network administrator at NASA's Goddard Space Flight Center in Greenbelt, Md.

"At least now Intel won't have a monopoly in that area," he

By integrating core networking capabilities into its servers, Compaq plans to help users better meld and manage network devices.

"The notion of Compag being able to provide a total endto-end solution allows users to consolidate management into one management tool — Com-Manager," paq's Insight Pushard said.

Tony Croes, an analyst at Currid & Co., a consultancy here, agreed that Compaq's move could be beneficial to users.

"Compaq is taking the same approach to net integration that it took to server configuration with SmartStart," CD-based

installation software that automatically configures a new server and installs applications tuned to run on a user's network, Croes

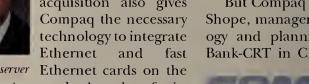
> said. "That drop-in approach to internetworking would take care of many of the headaches in net tuning and installation."

Frank Dzubeck, president of Communications Network Architects, Inc., a consulting firm in Washington, D.C., said Compaq's strategy to bundle net

capabilities into servers should pull Compaq servers into new installations.

"Previously, a network guy might not have chosen the Compaq server, but now he's got it all in one box. Compaq may think the dominant draw is the server when, actually, it's the communications," he said.

But Compaq server user Rick Shope, manager of PC technology and planning at Nations-Bank-CRT in Chicago, pointed



## COMPAQ'S COLLECTION

**Buying Thomas-Conrad gives** Compaq the following technology:

### Network adapter cards

- ► ISA-, EISA- and PCI-based Ethernet
- ► 4M and 16M bit/sec token-ring cards that support EISA, MCA and PCMCIA computers
- ► PCl-based 10M/100M bit/sec Ethernet cards
- ► ISA- and EISA-based 100VG-AnyLAN

## Workgroup hubs

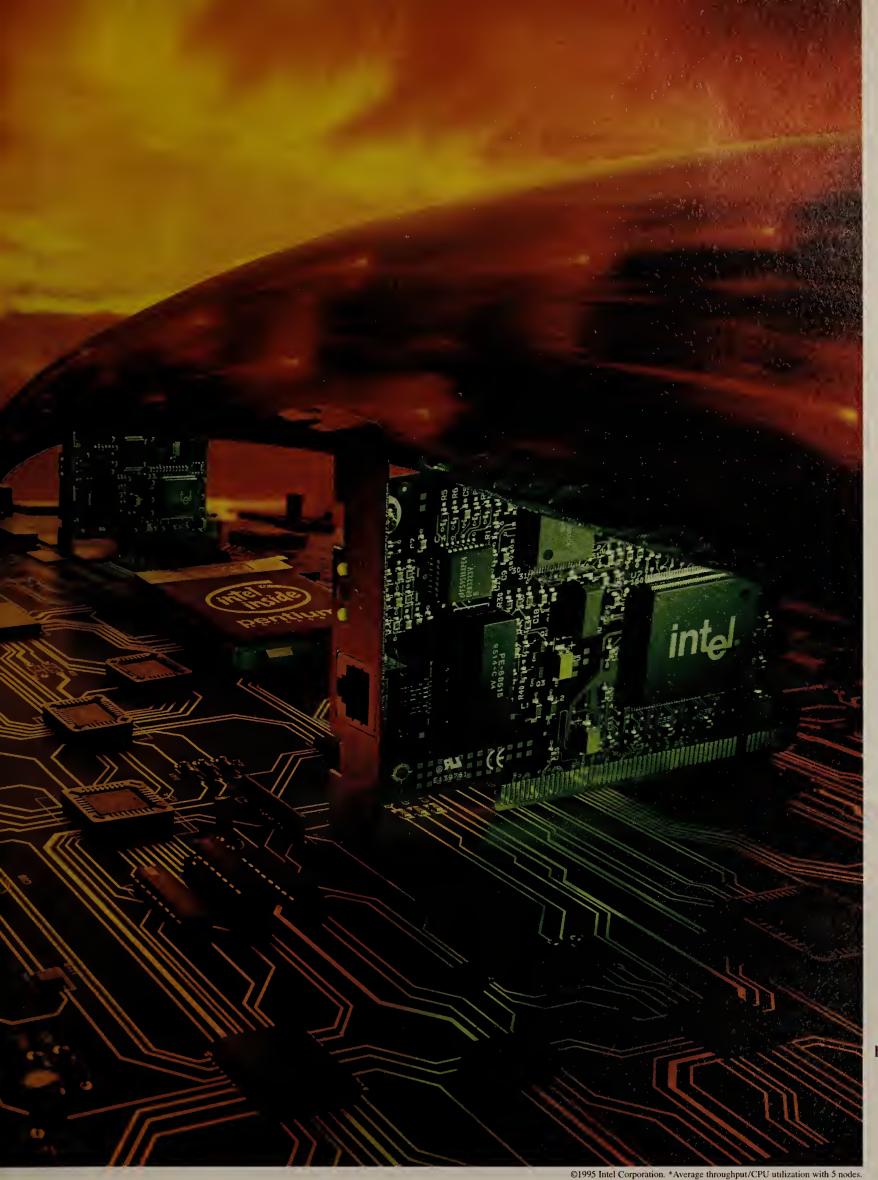
- ► Ethernet
- ▶ 100VG-AnyLAN
- Token ring

# Network management

Sectra Management System for Windows, an SNMP-based platform that can be used alone or with other net management packages

out that his company has two totally separate departments that are responsible for the buying decisions for hubs and servers, which could make integration more difficult.

META's Bain warned that large organizations should beware of concentrating all networking devices into a single box. "Under that model, if my server goes down, that means my whole network goes down," he







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Intel's newest Fast Ethernet adapter takes network response to an even faster level.



# Oracle to tighten security of network transactions

By Barb Cole

Redwood Shores, Calif.

Oracle Corp. this week will announce plans to team up with firewall providers to secure transactions over the Internet.

Under the plan, Oracle will develop SQLNet Firewall Proxy, software that works with firewalls to keep all but authorized users from accessing detailed information on Oracle databases ac-

cessed over the Internet, said Mike Earhart, manager of business development at Oracle (see graphic).

Firewalls are secure gateways that control traffic into and out of corporate networks. Most of them rely on software proxies to pass information from outside nets to the corporate backbone.

While Oracle databases and the company's SQLNet networking software may be used in conjunction with firewalls today, to date there has been no Oracleor database-specific proxy. So users have typically been given access to only limited amounts of Oracle database information via the Internet.

For example, a mobile worker accessing a corporate Oracle inventory database via the Internet is likely to have access only to data that is available to the general public, such as prices. With Firewall Proxy in place, that same user might be able to perform operations, such as recording orders, that require verifi-

### **ORACLE'S PARTNERS** Description Company/Product CheckPoint/FireWall-1 Filters network packets to enforce security. Digital/Firewall Service Software and consulting for building a custom-made firewall based on proxies. Raptor Systems/Eagle A suite of Internet and remote LAN access security software products based on proxies. Secure Computing/ Hardware and software that relies on proxies to Sidewinder protect access to internal nets. Sun/Solstice FireWall-1 Filters packets to enforce network security. **Trusted Information** Enforces security policies via proxies and provides a Systems/Gauntlet central point of control. An application-level firewall that utilizes SmartCard V-One/SmartWall technology and encryption.

# **DOD** goes on the SONET offensive

By Ellen Messmer

Scott Air Force Base, Ill.

The Department of Defense is ready to lease the world's largest private SONET network and is blowing away preconceived notions about networking in the

Instead of presuming that Synchronous Optical Network lines and bandwidth management have to be part of the same service, the Defense Department is making two separate bid requests for the upcoming Defense Information System Network (DISN).

The gigabit-speed SONET net will become the successor to

Jerry Edgerton, MCI Communications Corp.'s vice president for government systems, referring to the separation of SONET lines from bandwidth management. But with DISN expected to net the telecommunications industry more than \$6 billion over nine years, "it would be an unnatural act not to bid on it,' headded.

Bids on the first DISN request for proposal, called Switched/ Bandwidth Manager Services, are due next month. The second RFP, called SONET Transmission Services, will follow shortly thereafter.

A videoconferencing RFP

management should be separate from transmission. Presently, you're really getting locked in by the carriers," said Thomas Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J.

SONET operation, administration, maintenance and provisioning standards are lagging, Nolle pointed out.

But the demands that the Defense Department puts on vendors for SONET equipment interoperability should benefit commercial-sector users, too, he

By exerting control over SONET bandwidth management now, the department should find it easier migrating to its stated goal — Asynchronous Transfer Mode.

Indeed, despite howls from the telecommunications industry, the Defense Department has made it clear that it, and it alone, will do testing on carrier networks to ensure interoperability and security certification.

The department also wants carriers to link its network management centers to the Defense Information System Agency Center for Systems Engineering to exchange traffic engineering data via File Transfer Protocol.

"Interoperability is a primary requirement in creating a global, seamless electronic transport network enabling the war fighter to reach back and use the defense information infrastructure from anywhere," said Major General David Kelley, vice director of DISN.

Defense is requiring carriers to maintain over 99.9% uptime for both the SONET lines and bandwidth manager services. But recognizing that war is hell, the military said it will cut them some slack in the event of "nuclear blast, radiation, physical destruction or attacks from directed energy sources."

cation of access to that portion of their firewall systems.

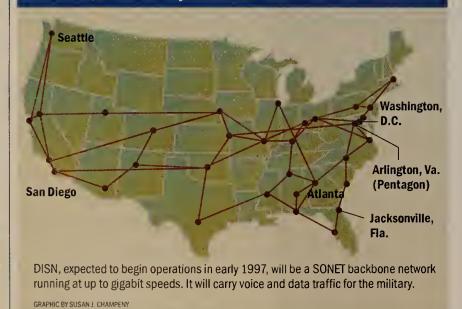
Analysts said the move could have a significant impact on how end users interact with Oracle databases via the Internet.

"The addition of the proxy means that customers can go right into the corporate database and place an order, rather than just browsing the on-line catalog," said John Pescatore, research director for information security at International Data Corp., a research firm in Framingham, Mass.

According to Earhart, the SQLNet Firewall Proxy will be integrated with the firewalls in as soon as 90 days.

Oracle: (415) 506-7000.

# The Defense Information System Network



gle of T-1 lines from decade-old contracts, providing the agency with voice and data services nationwide.

The DISN strategy could force the long-distance carriers to link their SONET lines to their rivals' central-office bandwidth managers. And some carriers are not happy about being drafted into the Defense Department's telecommunications revolution.

"It's an unnatural act," said

the Defense Department's tan- and a separate SONET integration award complete the DISN architecture for the continental U.S. Industry observers expect to see RFPs for international DISN extensions emerge in the coming months.

Although the Defense Department's strategy is complicating the planning process for the telecommunications industry, some analysts think the military is on target.

"Switching and bandwidth

# Messaging vendors lock arms to support X.400 address portability

By Ellen Messmer

San Francisco

the database.

a major security risk.

available," Earhartsaid.

not rely on proxies.

While it is also possible to give

users that kind of access to cor-

porate databases without fire-

walls, such an approach presents

a means to identify a user [with

an ID and a password], so you

can make more information

plan, CheckPoint Systems, Inc.

and SunSoft, Inc., offer firewalls

that analyze net packets and do

would work with these vendors

to more tightly link SQLNet to

According to Earhart, Oracle

Two vendors named in the

"The Firewall Proxy provides

Six electronic mail service providers last week locked arms in support of X.400 address portability, so companies that change mail vendors need not change their X.400 addresses, as well.

AT&T, Advantis, ARINC, GE Information Services (GEIS), Infonet Services Corp. and MCI Communications Corp. said they have achieved X.400 address portability in their networks by following the guidelines put forward by the U.S. National Message Transfer Service Implementors Group.

"This means X.400 users won't have to reprint business cards when they change carriers, and you won't have to advertise your carrier on your business card," said Gary Rowe, a principal at Rapport Communication in Atlanta. "X.400 portability makes it possible to have multiple service providers."

Pacific Bell and Sprint Corp. also pledged to have X.400 portability in their messaging nets.

Kathy Shea, marketing manager at GEIS, said users will have

to register their firm's management domain name at ANSI in New York to take advantage of X.400 number portability.



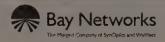
"ANSI is disseminating the X.400 routing tables to the carriers," Shea said. "The X.400 addresses are linked to the organization names."

Durwin Sharp, electronic commerce adviser at Exxon Corp. and member of the X.400 implementors group, called X.400 "the perfect platform for building electronic commerce applications," adding that X.400 portability is greatly needed for large-scale user networks.

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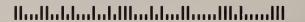


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when you need it. You'll be segmenting your network and leveraging your existing 10BASE-T equipment.

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# Wireless

Continued from page 1

adopting wireless technology. And the simplified pricing should help insulate them from sticker shock.

"People have lots of problems seeing wireless applications through from beginning to end because the apps cross so many technology boundaries and platforms," said PhilSchultz, project director for a \$12 million wireless trading application that spans the Chicago Board of Trade and the Chicago Mercantile Exchange. So vendor efforts "will simply have to help users," he said.

Vendors have already made progress. Last week, IBM, Software Corporation of America, ARDIS Co., Metro Listing Service and national integrator Inacom all joined together to



How is the mobile data market coming along, anyway? Here are some random indicators:

- Analysts say there are fewer than 3,000 RadioMail subscribers.
- A total of about 2,000 Motorola Envoy and Marco personal communicators have been deployed. The business plan was to sell tens of thousands by the end of this year.
- AT&T Wireless Services, formerly McCaw Cellular Communications, reports that data makes up 1% to 3% of the traffic on its cellular net.

bundle IBM Think Pad notebook computers, a Multiple Listing Service (MLS) application, packet radio network services and access to Metro Listing Service's



MLS database, all for real-estate brokers

The fee? Less than \$100 per month.

Also last week, Norand Corp., Racotek, Inc. and RAM Mobile Data said they have bundled ruggedized handhelds, application software, middleware and airtime for workers who service accounts in the retail food and beverage markets (*NW*, Oct. 16, page 22).

Earlier this month, AT&T Wireless Services launched three integrated Cellular Digital Packet Data-based packages for sales automation, field service automation and mobile LAN access.

Such bundles could alter today's sad state of affairs where "not a single vendor can do an end-to-end wireless network for a customer," said Andrew Seybold, editor of the "Outlook on Mobile Computing" newsletter, at his Mobile Outlook confer-

ence and exhibition here last week.

A big problem is that carriers have wasted too much time fighting one another for market share, rather than collectively growing the wireless data industry, Seybold said.

The bundling craze could signal that the industry is coming around to Seybold's way of thinking.

It could also help smooth over another key sticking point conflicting wireless data standards — by leaving coverage and compatibility assurances up to the vendor integration team.

"It has been a dogfight in the wireless standards area," said John Hughes-Caley, program manager for the U.S. Postal Service, who attended last week's show.

"The cellular carriers can't even get roaming standards in place," leaving a question surrounding the longevity of wireless investments, he said.

These conditions and the lack of applications optimized for wireless "all add up to a pathetic kind of industry," said Alan Reiter, editor of the "Mobile Data Report" newsletter and Seybold's cohost at the Mobile Outlook show.

"Vendors will tell you an [existing] application will run right out of the box over a wireless network, and it will; but it will run terribly, he said."

And "devices are expensive, considering there are so few applications for them," said Jill Feldhausen, a mobile projects leader at the University of Arizona School of Medicine.

Nonruggedized hand-helds cost from \$350 to \$1,500, and accompanying wireless modems are still in the \$500 to \$700 range.

In theory, vendor bundles should overcome some of these hurdles.

But users should avoid getting trapped by these vendor partnerships in case one partner's products do not perform, cautioned Helen Kulas, information technology project leader at Northern States Power Co. in Minneapolis.

Kulas recently rolled out a wireless field service application and, as a safeguard, decided to lease all her components. This gives her an inexpensive out if one vendor starts compromising the solution.

And Gib Hoxie, executive vice president at The Pacific Group, a mobile consulting firm in Santa Clara, Calif., said prepackaged bundles are likely to be too generic to be useful without some customization for a given user's business.

# What's cooking in wireless kitchen?

etwork managers may soon see the rebirth of wireless electronic mail as the result of bundled devices, software and network airtime that allow users to connect to their corporate mail applications, according to sources.

Low-cost rental options for these packages might further spur users to give wireless data a try by reducing their capitol investment risk, according to analysts.

Unannounced but related endeavors that are under way include the following:

■ Megahertz Corp. is expected to announce the industry's first Type 2 PC Card (previously called a PCMCIA card) for Mobitex networks next week. RAM Mobile Data is the U.S. Mobitex network operator.

The card will fit into a handheld device, unlike the Mobitex Type 3 PC Card from IBM.

The \$500 price tag will include RadioMail Corp. and WyndMail Corp; messaging services and software from Research In Motion, Inc. that allows Windows files to be exchanged over the Radio-Mail service, according to sources.

- Motorola, Inc. plans next week to announce the industry's first PC Card that allows laptops to connect to SkyTel Corp.'s new SkyTel 2-Way paging service (NW, Sept. 18, page 10), which went live last month, said a source close to Motorala.
- Ericsson LM is reportedly scrambling to come out with its own two-way paging card, codeveloped by Wireless Links in Israel.

This will allow commercial two-way paging services to run over Mobitex nets around mid-1996.

In the U.S., such a system would allow RAM to compete with the new narrowband Personal Communications Services offerings.

Pacific Communications
Sciences, Inc. is said to be
developing with DaimlerBenza self-contained 10ounce phone/modem that
supports circuit-switched cellular and Cellular Digital
Packet Data networks, and
integrates voice, E-mail and
fax applications.

# AT&T pushes two types of wireless data service

T&T Wireless Services last week took a new tack in positioning its Cellular Digital Packet Data (CDPD) service against its widespread circuitswitched analog cellular service, which

some have long used for data transmission.

While launching CDPD service in a key newmarket—NewYork and NewJersey—the former McCaw Cellular Communications, Inc. created two categories of wireless data service: Wireless Circuit Data Service and Wireless Packet Data Service. The latter is the new name for the company's CDPD offering, which was formerly known as Air-Data.

AT&T has decided to formally promote its circuit data services because the company has begun installing modem pools that front-end its cellular switches and support cellular error-correcting protocols such as Enhanced Throughput Cellular

from AT&T Paradyne and MNP-10EC from Microcom, Inc.

As with modem pools already installed in other cellular carriers' networks, the support of these protocols renders a cellular connection for data that is far more reliable because it approaches the quality of a landline link.

The modem-pool service, for which AT&T said users will pay no extra fee, is an alternative to users' upgrading their own host modem pools with cellular error-correcting protocols.

The circuit service is "an AT&T acknowledgment of reality: that CDPD as a ubiquitous data service of choice is over," said Bill Frezza, president of Wireless Computing Associates, a consulting firm in Yardley, Pa. AT&T has come to terms with the fact that "there will be no nationwide [CDPD] footprint for years, and in the meantime, data

users need to be accommodated."

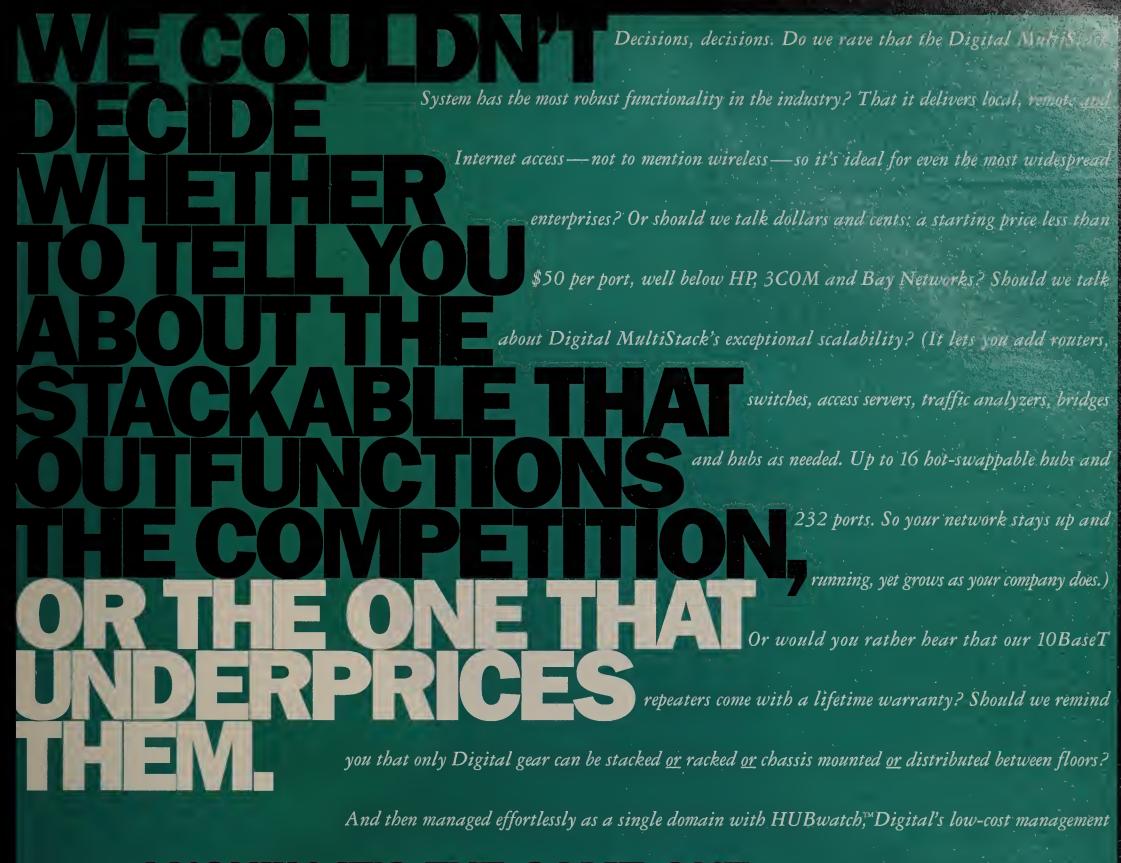
And until now, AT&T has been hesitant to push its circuit network for data use because it could not guarantee reliability levels appropriate for such applications, according to industry watcher Alan Reiter, editor of "Mobile Data Report."

Users should be advised that there are some limitations with the circuit service when roaming into another carrier's market, said Clayton Foster, AT&T circuit data service marketing manager.

"You can't use the [error-correcting] service in some cases because there are no modem-pool standards for billing systems and such," he said.

Foster added, though, that AT&T is working on striking partnerships with other carriers for the service.

The modem pools are deployed only in New York now. Pittsburgh, Las Vegas, Sacramento and Fresno, Calif., are to be up next, Foster said.



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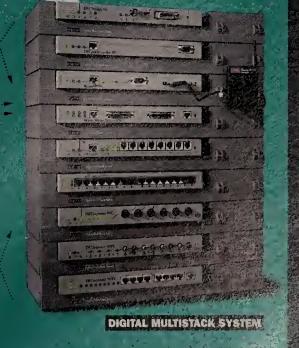
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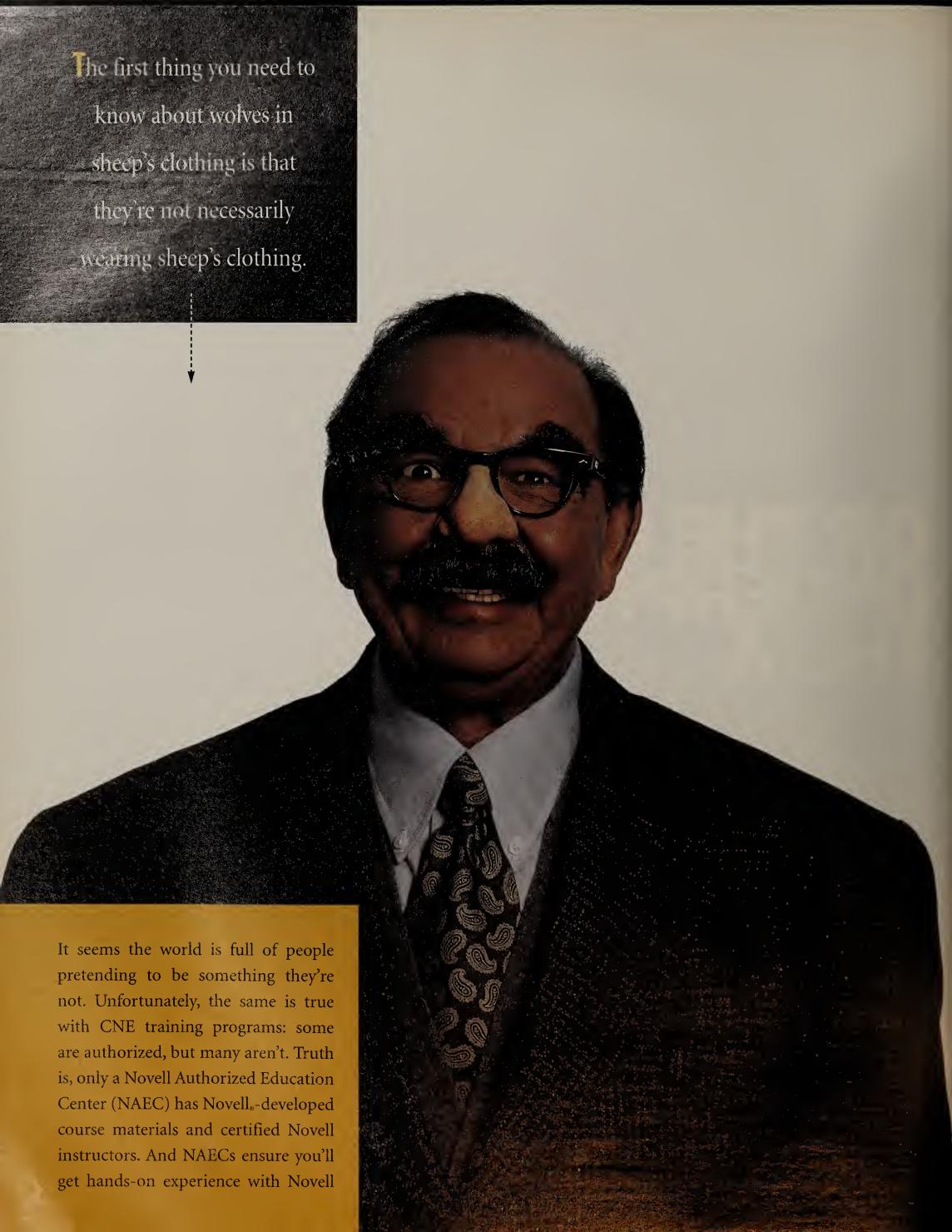
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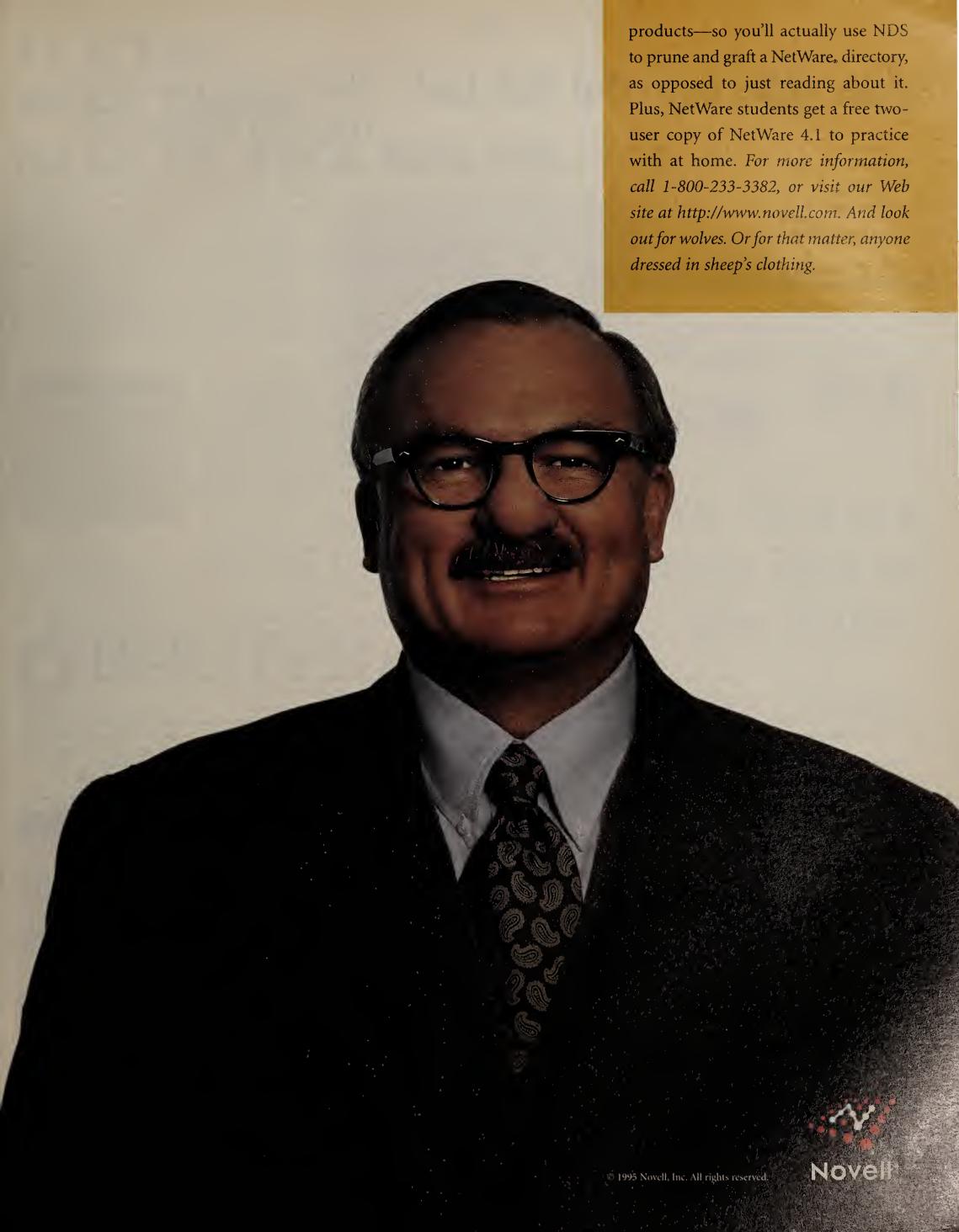
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# Spider spins powerful Web tool

By John Cox

Palo Alto, Calif.

The World-Wide Web's primary use so far has been as a document repository and as a showcase of cutting-edge graphics design. But a software product unveiled last week finally lets the Web do some heavy lifting.

on the Web in a very short time."

Without a tool like Spider, Schutt said programmers have to write custom applications in C, C++ or the Perl scripting language as well as create the code for connecting to the database via the Common Gateway Interface, the Web specification for

stored procedures and error handling.

The Metropolitan Indianapolis Board of Realtors is using Spider to link Web browsers used by realtors to property listings that have been exported from the board's legacy system to an Informix database.

"It has reduced our development time enormously," said Joe Milton, the board's systems administrator.

In the future, Milton expects the Web will replace the legacy system. "Users will have a common interface, [which is the Web browser], and we can bring in new areas just by working with Internet service providers in those areas instead of adding [private] dial-up lines," he said.

So far, security is not a major issue for these users. The Web server can be set up to ask for the user's identification and password, and Spider can pass that information to the database server to enforce access rights.

One thing the product is missing is support for transactions, said Michael Goulde, a senior consultant with Patricia Seybold Group, a Boston-based research and consulting company. The software needs to support the two-phase commit protocol for these types of applications, he

Prices start at \$5,000 for the basic package of five developer licenses and 10 concurrent database users. Spider runs on HP-UX, Sun Solaris and Iris operating systems.

©Spider: (415) 969-6665.

# AT&T to dump its modem, DSU/CSU manufacturer

### By Tim Greene

AT&T is looking to unload its Largo, Fla.-based AT&T Paradyne subsidiary, which sells modems, DSU/CSUs and chipsets for HDSL and ADSL technology.

While the official line is that AT&T wants to set Paradyne free to sell to the widest possible customer base, others say the company is marginal and not key to AT&T's overall success. No buyers or bidders had been named at press time.

Paradyne may do better under the new arrangement.

"By separating from AT&T, Paradyne avoids possible conflicts in selling to AT&T's competitors, yet AT&T will still have access to Paradyne's current and future products and technologies as a customer," said John Berndt, president of AT&T Multimedia Ventures and Technologies.

It may not be so rosy. In fact, the separation hurts Paradyne in two ways, argued Daniel Briere, president of TeleChoice, Inc. in Verona, N.J.

First, Paradyne loses its biggest customer — AT&T Communications Services. "AT&T can go out and get the best equipment from whomever. They're not saddled with pushing Paradyne equipment first whether or notit's the best," he said.

Second, Paradyne loses the value of the AT&T name. "AT&T is the cachet, right?" Briere

IBM teams on data warehousing

He said Paradyne's worldwide

service structure was one of its strongest assets. The company has more than 140 service locations in North America alone.

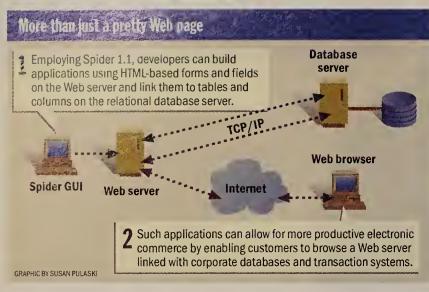
If that organization deteriorates, it could be troublesome for Ascend Communications, Inc., which earlier this month announced that Paradyne's customer service unit would take over remote and on-site maintenance, as well as installation of Ascend's remote access product

# AT&T PARADYNE'S ATTRACTIONS

- Comsphere modems
- Acculink DSU/CSUs
- Acculink Access Controller multiplexer
- Comsphere Management System
- ► GlobeSpan ADSL and HDSL transceiver technology

Paradyne also makes chipsets to enable High-bit rate Digital Subscriber Line and Asymmetric Digital Subscriber Line technology. Those enable high-bandwidth throughput on unshielded copper wires. ADSL was designed specifically to bring videoon-demand services to the home over a standard analog phone

Paradyne recently introduced Symmetrical Digital Subscriber Line, a technology that would give a standard two-wire copper analog phone line the capacity of a four-wire T-1 line.



Spider Technologies, Inc.'s Spider 1.1 is a tool for building Web applications that give end users access to relational databases through Web home pages. While such applications could be assembled previously with hours or days of intense programming, the start-up's graphical user interface-based tool lets programmers create Web-to-database applications with a few clicks of a mouse button.

This conceptually simple link will wire interactive Web applications to major corporate data assets.

"I haven't seen any real database applications out there [on the Web]; it's been mainly search engines," said Paul Schutt, president of The Collective, a Midland, Mich., company that builds Web pages for clients and has been beta-testing Spider. "[With Spider,] we can create a fully functional database application

accessing external applications. Programmers have to know both the HyperText Mark-up Language (HTML) for creating Web documents and SQL for manipulating the database.

Spider handles all of this automatically, said Zack Rinat, president and chief executive officer at the company.

The Spider development environment includes screens that let programmers visually map database tables to HTML fields and store the result as a map file on the Web server. It also generates the necessary SQL code to manipulate the database.

Spider relies on the database vendor's communications software running over TCP/IP to fire off commands to the database server.

Initially, the software supports databases from Informix Software, Inc., Oracle Corp. and Sybase, Inc. It also supports

# **IBM** and friends hatch plan to ease data warehousing

By John Cox

Nashville

A squad of data warehouse tool vendors last week said they are adapting their products to work with IBM's growing line of distributed data management middleware.

The technology partnership, which was announced here at the IBM Data Warehousing Conference, is intended to make it easier for corporate MIS groups to integrate the many products needed to create data warehouses. By doing so, MIS will be able to build warehouses more quickly and manage them more effectively.

The following companies are linking their products with IBM's data management middleware products:

Company Essbase: A multidimensional database for extracting and **Arbor Software** analyzing DB2 data. BusinessObjects: A data access tool set that lets end users **Business Objects** access and analyze relational data using common business **Information Advantage DecisionSulte:** Decision-support applications for multidimensional analysis of relational data. extract DB2 data and analyze metadata. **Vality Technology** Integrity Data Re-engineering Tool: Methodology and programming environment to explore, transform and integrate data from disparate sources, and to extract undocumented

business rules from legacy applications.

Five tool vendors, along with a half-dozen service companies in systems integration, consulting and training, are the first members of the IBM data warehouse

This integrated approach is already proving to be successful, at least for one beta tester of IBM's Visual Warehouse, which is a package of products and ser-See IBM, page 68

# Web access to CICS

niKix Technologies has begun beta-testing software that will let Web browsers access CICS applications that support the 3270 terminal interface.

The firm's WebKix software will eliminate the need for users to build graphical user interface front ends to existing CICS terminal applications, since the Web browser will serve as a universal client. WebKix runs as server software under the UniKix transaction processing monitor.

Through an external presentation interface, Web browsers will be able to directly access CICS applications on local Unix servers and, via an intersystems link, CICS applications on other networked servers. Pricing and availability will be announced later.

IBM, too, is working to provide a Web connection to CICS and DB2 applications.

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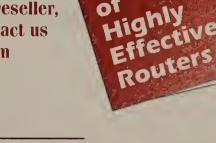
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# **Briefs**

■ In its recent announcement of Impower, NYNEX Corp.'s strategy for business services, NYNEX President Richard Jalkut prom-



groupware by the end of next year, but did not name it. IBM, a partner in Impower, said it

ised on-line

hoped that software would be Notes from Lotus Development Corp., its recent purchase. NYNEX also announced it will team up with Bell Atlantic Corp. next spring to jointly offer frame relay service between New York City and New Jersey. That will let users deal with just one carrier when buying the service for sites in both locations.

- Vendors are starting to push wireless Internet access as a way to spur wireless data networking. IBM announced that its Cellular Digital Packet Data (CDPD) modem now comes bundled with the IBM Internet Connection Kit, a software package that ties users to the 'Net over CDPD packet radio services.
- Metricom, Inc. announced that it is charging a flat \$29.95 per month for use of its 28.8K bit/sec Ricochet packet radio net. That price includes network usage within the Ricochet network and unlimited wireless access to the Internet/World-Wide Web, as well as most other on-line services. Ricochet is only operational in the San Francisco Bay Area and a few college campuses around the country
- SunSoft. Inc. has withdrawn from this week's Enterprise Management Summit shoot-out due to customer obligations. The company did not have the time or resources to prepare.

With the recent withdrawal of Hewlett-Packard Co., the summit shoot-out will now be lacking the top two providers of enterprise network management software.

# **LDDS WorldCom to** join the T-1 ATM fray

Offerings will be based on two new products from StrataCom.

### By Tim Greene

Starting in the spring, LDDS WorldCom will offer a nationwide T-1 ATM service made possible by new offerings from StrataCom, Inc.

The T-1 service will put LDDS WorldCom behind Sprint Corp., which introduced its T-1 Asynchronous Transfer Mode service earlier this year (NW, Aug. 7, page 21), and AT&T, which has promised to unroll a T-1 ATM offering by the end of the year.

The broad LDDS WorldCom offering will include constant bit rate, variable bit rate and available bit rate services. There is no price list since the costs will be determined on an individual case basis, a company spokes-

The service will appeal to users that lack big bandwidth needs but want to extend ATM to their WANs, said Glenn Gabriel Ben-Yosef, president of Clear Thinking Research, Inc. in Boston. "If you want to start off with ATM, 1.55M bit/sec isn't a big



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jump," he said.

The LDDS WorldCom offering will be based on two new products from StrataCom: a T-1 ATM User-Network Interface

(UNI) module and a T-1 frame service module that enables frame relay network interworking and frame relay-to-ATM service interworking.

Both fit in the StrataCom BPX ATM switch, which is used in the LDDS WorldCom network and was designed as the backbone for large corporate networks.

The new modules allow users to upgrade parts of their frame relay networks to ATM without upgrading all sites, enabling the decision to upgrade to be based on a site-by-site need.

### It'il be FUNI

In the first quarter of 1996, the UNI module will include support for ATM inverse multiplexing and the frame module will include a Frame User-Network Interface (FUNI).

The inverse multiplexing will allow users to increase bandwidth at T-1 increments, rather than taking the larger jump to a T-3 (45M bit/sec).

Ben-Yosef said the modules might also have a strong market internationally where some countries' telephone infrastructures will not support speeds higher than T-1.

The modules were engineered to be interoperable with ADC Kentrox customer premises equipment — the AAC-1 and AAC-3 access concentrators. They are also interoperable with FastComm Communications Corp.'s LAN Sargent, its ATM bridge that supports Ethernet and frame relay to ATM.

The inverse multiplexing interface between the StrataCom switch and the ADC Kentrox AACs is based on a specification formulated by StrataCom.

According to StrataCom, that interface can be upgraded with a software change to meet whatever standard is agreed on by the ATM Forum to allow interworking with other vendors' equipment. Criteria that the forum has

See ATM fray, page 22

# **MCI** fights to keep juicy AT&T deal

## By David Rohde

Washington, D.C.

If you sign a contract and your vendor later says it made a mistake, can you still enforce the terms?

Maybe not, at least if that contract is for net services.

That issue arose out of an unusual situation, wherein MCI Communications Corp. ended up with incredibly inexpensive phone service in Mexico, courtesy of AT&T.

A dispute over the deal was triggered when alert MCI officials actually ordered and began to use an AT&T service,

developed for another customer, that provides special rates for calls between the U.S. and Mexico. The service - a negotiated deal filed as Contract Tariff No. 360 with the Federal Communications Commission — provides for a 13th month of additional free calls with no limit on their volume.

Under federal regulations, carriers must make available the same offer to "similarly situated" customers - including other carriers — even if it's a specially negotiated contract tariff.

The tariff also includes an admitted mistake by AT&T officials, who, according to observers, neglected a special feature of

WHAT A DEAL!

In August, MCI

bought \$913,000

worth of AT&T

International

service under a

tariff filed by AT&T.

AT&T now claims

that the tariff

contains mistakes

and is trying to get

It changed.

calls between the U.S. and Mexico in which the price of the call is split into two portions.

"They forget to apply the schedule that applies intra-Mexico. So, basically, service within Mexico is free," said Colleen Boothby, a partner in the Washington law firm of Levine, Blaszak, Block & Boothby.

AT&T is currently seeking to alter the terms of the

deal under its right to file revisions to tariffs. But MCI has challenged the filings, asking the FCC to reject the changes as being without "substantial

# Vendors pounding out a new MIB for apps management



A core group of vendors convened along with Senior Editor Michael

Cooney in Atlanta at the recent NetWorld+Interop event and kicked around how to better manage distributed applications. In the coming months, this group is expected to develop a new Management Information Base (MIB) that would let users more easily handle applications from industry-standard Simple Network Management Protocolbased management platforms.

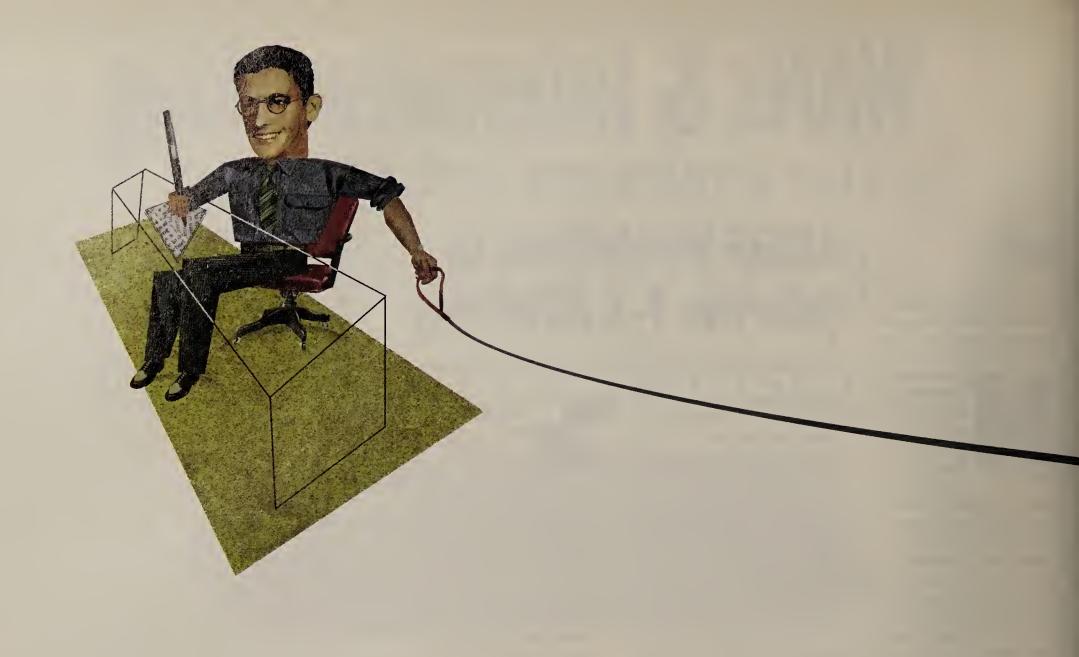
Chairing the group in Atlanta was Richard Sturm, a principal with the Enterprise Management Institute, Inc. in San Francisco. Others on the panel included Michael Erlinger, a

member of the technical staff of Aerospace Corp.; Richard Whitehead, a systems engineer at Micromuse USA, Inc.; Mark Sutter, vice president of product development with Seagate Enterprise Management Software; Jon Weinstock, senior software engineer at Bell Communications Research: Brian Handspicker, a manager with Digital Equipment Corp.'s Networked Systems Management group; and Leo Cole, head of systems managementatIBM.

Sturm: How important is it that users be able to manage application software running on remote, distributed systems?

Weinstock: We've seen cus-See New MIB, page 20

See MCI, page 22



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# Riding high on Spectrum 4.0

Users are anxious to see a mix of features that are appealing to different needs.

**New MIB** 

Continued from page 17

tomers that have had large cli-

ent/server projects where

they've rolled out pilot projects

and would have liked to have

gone to 1,000 clients. They

stopped when they saw how diffi-

cult it was to manage 100 clients,

so they put the rest of the project

on hold until they could get a

better handle on how to manage

that environment. The lack of

standards, the lack of applica-

tion management capability is

impeding client/server applica-

Read the complete transcript of

this Q&A on Network World Fusion.

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Handspicker: The scale and

scope of the problem is dramati-

cally greater for application

management because you've got

far more complexity in the num-

ber of things to be managed and

in the relationships between

them. An operating system is an

operation system, but an applica-

tion isn't just an application. It

might be a command system, or

it could be a [transaction proces-

then WANs and Internetworks.

tion deployment.

By Jim Duffy

Rochester, N.H.

Users of Cabletron Systems, Inc.'s Spectrum network management platform are eager to take Version 4.0 of the software for a spin.

As expected, Cabletron last week unveiled Spectrum 4.0, which features enhanced enterprise management capabilities through more distributed functions, as well as support for Windows NT (*NW*, Oct. 16, page 8). For a variety reasons, users have been anxious to get at these features.

"They've addressed a lot of concerns we had, a lot of features that we wanted in this, more so than in [Spectrum] 3.0 and 3.1," said Bob Currier, director of network communications at Duke University in Chapel Hill, N.C.

Currier found Spectrum 4.0's distributed enterprise alarm management function particularly useful. This feature, which includes a new application called Distributed Alarm View, provides operators with a consolidated view of distributed alarms and policy-based alarm filtering and forwarding.

"Right now, we're running distributed databases, and the alarms don't roll completely up [to the enterprise console]," Currier said. "With 4.0, I'll be able to get full detail of alarm accounting all the way down across the enterprise."

Saskatoon District Health in Saskatoon, Saskatchewan, is drawn to Spectrum 4.0 for its ability to run on Windows NT, said Guy Paterson, network administrator at the health care provider. The firm will begin its migration from Spectrum 3.X next year.

"Cabletron has indicated to us that they will be developing their updates on the NT platform first, that their first issue of new product releases will be on NT," Paterson said. "We are an avid user of the NT platform."

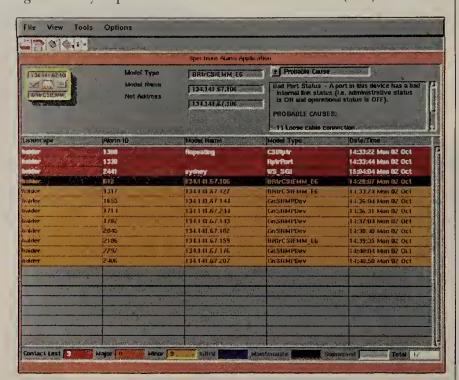
Credit Suisse is looking forward to Spectrum 4.0's ability to make several management servers look like one logical server. This is accomplished by the product's Distributed Data Manager application, which provides access to data from physically dispersed Spectrum servers.

"That's very important to us because we have Spectrum installed in multiple locations around the world. We've already begun to tie them together, but further integration will be of great value," said Michael Smith, head of information and trading technologies at the New York-based bank.

Credit Suisse will also benefit from the Distributed Data Manager's ability to provide a 20-to-1 reduction in management data for faster access and storage.

Spectrum 4.0 costs \$10,000 per server and \$5,000 per client. It will be available in the first quarter of 1996.

©Cabletron: (603) 332-9400.



**Spectrum 4.0's** Distributed Alarm View feature allows operators to view, filter, sort and select enterprisewide alarms, which are color-coded based on priority or severity.

# Proginet helps its enterprise Windows NT users feel secure

**By Michael Cooney** 

Garden City, N.Y.

Proginet Corp. this month beefed up security for users of its mainframe-to-Windows NT bulk file-transfer program.

The company tweaked Fusion so users can authenticate requests to upload and download mainframe data to and from Windows NT clients. This helps ensure the security of several applications, such as backing up servers and automatically distributing mainframe data to databases across the enterprise.

Fusion, a software package jointly developed by Proginet and Microsoft Corp., supports high-speed file transfers between Windows NT machines and also provides Microsoft's BackOffice server-based applications access to mainframe data (*NW*, July 10, page 1).

Fusion comprises, among other things, Proginet's File Transfer Management System (FTMS), which is an industrialstrength file-transfer program that manages data exchange between MVS mainframes and LAN servers and desktops. Microsoft has optimized its Windows programs and applications to run with FTMS.

### Data exchange support

Fusion also supports Microsoft's OLE technology, enabling users to pull data into Windows applications from mainframe files and databases.

"Secure data exchange between the mainframe and Windows clients is fast becoming an issue as the Windows NT environments grow larger," said Joe Mohen, chief technology officer with Proginet. "What we've done is really optimize Fusion to support the security features of Windows NT 3.5."

Essentially, that means Fusion now supports the master domain concept of Windows NT. The master domain technology lets users group large clumps of NT clients as a single entity.

Security then can be administered across a wide swath of users rather than individually or in small workgroups, a task that requires a lot of administration, Mohen said.

"It's now much easier to propagate security across the NTbased enterprise," he said.

### Beta testers react

Users beta-testing the new productlike what they have seen.

"Fusion has simplified our security procedures because we can now specify user IDs and passwords to specific users or groups of users and control access to the mainframe in ways we couldn't before," said Warren Kerby, a client/server specialist.

Fusion comprises three components: software for the MVS mainframe, Windows NT or Windows 95 desktops or servers, and agent code for clients linked to a server. Servers must run Microsoft's SNA Server package, which is Microsoft's LAN-to-SNA mainframe gateway.

SNA Server employs an LU 6.2 pipe between the server and the mainframe, letting the Fusion components communicate as peers.

Fusion clients can access data residing on mainframe-based applications and databases. The security upgrade is avail-

able at no charge.

©Proginet: (516) 248-2000;

Microsoft: (800) 426-9400.

sor] monitor or a database.

Sturm: We are talking about creating a MIB for application management. Along those lines, is SNMP up to the task of managing applications? Is it robust enough?

Handspicker: What we need initially is to be able to exchange management information about applications, and we need a stan-

dard means of understanding what management information is available for an application. The secondary question is, how do we turn around and get management application functionality where it should be. Personally, I think it's not unreasonable to have man-

agement functionality available on either end of an SNMP connection.

Sturm: I don't think the use of SNMP is a foregone conclusion. I think you only have to look at the telecommunications industry to see how they're desperately seeking an alternative to SNMP because they don't feel it's suited to their environment.

# Sturm: What's going to be the cost impact if this is created?

Sutter: When it comes down to actual cost, the total is going to appear in a couple of places. With small products, I think

users can expect manageability to be a premium option. When you start looking at very large systems and large applications, then I think users are going to expect manageability to be part of the features set and will expect the cost to be absorbed.

Handspicker: For low-end products, application management may be an expensive addon. In fact, one of the things that



**Industry luminaries** discuss how the lack of apps mgmt. techniques inhibit client/server growth.

I'm seeing is that over the next six months, you'll see that manageability is going to become a very important competitive differentiator between even fairly low-end products. Now this brings with it the importance of making sure that we get standards defined for MIBs. Otherwise, we're going to have a Tower of Babel out there.

Weinstock: I believe that we should work together as an industry on some common application management MIBs, so that we can get to some true integrated application systems and network management.



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# ISDN database still a dream

By Tim Greene

Bell Communications Research will offer its national database of ISDN availability and pricing on-line, partially fulfilling a long-held dream of users for a single source of relatively fresh information.

While Bellcore has no delivery date for the service, it is working toward posting the information on the Bellcore World-Wide Web home page.

The service, however, would not be free, but Bellcore has not worked out billing details yet.

A major problem users face now in setting up ISDN networks is they have to contact the local exchange carrier (LEC) that serves each proposed site in the network to find out whether ISDN is available there, what flavors of ISDN are supported and what it costs.

Bellcore has compiled and

published a national list annually for five years, but the data is 2 to 5 months old when it is printed, which usually is in November. Anyone referring to the list at that time of the year would be getting data that is more than a year old.

Bellcore hopes to get LECs to buy into the on-line idea and agree to update their information directly on the Web site.

A Bellcore spokesman said the firm was still working on software and security for the service.

While it is an improvement over what has been available, the list falls short of what users represented by the Switched Digital Services Applications Forum want: a current, comprehensive database.

# MCI

Continued from page 17

cause" - a long-standing standard for rejecting any tariff change. Observers are watching the spat closely for its user implications, especially following the FCC approval of AT&T's right to change tariff rates with one day's notice.

''The entire…industry—carriers and customers alike — will be following this proceeding to see if carriers are to be required to deliver on their promises," claimed MCI attorney Donald

Observers said the problem AT&T is having with Contract Tariff 360 relates to why AT&T was unwilling to simply offer to

freeze users' contract tariff terms for I2 months in return for the recent FCC declaration that the carrier is no longer a dominant carrier (NW, Oct. 16, page 67). In addition to the freeze, AT&T retained the right to ask users to terminate the service without penalty if they did not like the tariff changes — something AT&T clearly wants MCI to do in this case.

The experience indicates the problems large users may continue to have as long as network services — even negotiated services — remain yoked to tariffs and, thus, are never completely fixed, according to James Blaszak, another partner at the law firm of Levine, Blaszak, Block & Boothby.

# Slowing down ATM Carrier ATM services at T-1 rates can let users connect LAN ATM networks. **ATM** switch ATM switch Public network (LDDS) T-1 ATM inverse multiplexing Hub GRAPHIC BY SUSAN J. CHAMPENY

# ATM fray Continued from page 17

already agreed to was incorporated in the StrataCom specifications, a spokesman said.

According to Thomas Nolle, president of CIMI Corp., a technology assessment firm in Voorhees, N.J., the services initially will cater to users with a need for multimedia, multiclass ATM service.

But as both carriers offer FUNI, the services' usefulness will broaden.

"FUNI is a better choice for ATM transport than cell-structured ATM because cell-structured ATM has a much higher overhead and the higher overhead is more significant with lower bit rates," Nolle said.

It does not make sense to use a multimedia interface, multiclass of service with data applications. Offering ATM at a very low bit rate makes ATM services available to smaller sites, and that makes ATM more generally useful to businesses, Nolle explained.

# WAN MONITOR

# Graduating from Electronic Billing 101

s carrier billing setups move more toward transaction mega-systems and away from simplistic call-record processors, one thing is for sure — the size of your bill is going to get bigger. We're not talking about the size of the payment; we're talking about the physical size of

One interexchange carrier client told us about how a new service repaccidentally clicked on the Requests Paper Call Detail box for a large customer when updating the billing definition record. The error was not determined until two 18wheelers pulled up to the customer's loading dock with that month's bill.

Unless you switch heating systems, there's not much you can do with that much paper.

So the carriers have launched their versions of electronic billing in the age of multimedia — CD-ROM based billing analysis tools that help decrypt the bill for the customer and avoid clearing too many forests. Sprint started this trend years ago with its Fonview product, and the most recent version, 6.0 for Windows, really breaks some new ground.

Until now, our standard view has been that AT&T's Billing Edge product, itself a Windowsbased product, is clearly the best offering out there. Billing Edge is intuitive and easy to use, and allows anyone to find just about any piece of information in seconds. It was really the only product that met more than just the most basic of end-user electronic billing needs.

And it's a heck of a lot easier to use than sifting through pallets of paper.

With Fonview for Windows 6.0, Billing Edge now has competent competition. The new version adds some aspects to electronic billing that have been sorely needed. The most significant feature of this package is a drill-down capability that allows you to take any item on your bill and ''drill down'' to more detail.

Let's say your feature charges were \$27,605 last month, and that seems like a high amount (seems so to us, anyway). Instead of just grumbling, you can click on a small icon next to the Feature Charges title, and a full listing of all the components of that \$27,605 comes up on the screen. No more laying a bill down the hall to see all the pieces, and no more trying to link accounts with one another to try to put together the whole story.

Sprint's Fonview for Win-

Daniel Briere and Christine Heckart

dows achieves a sense of layering that lets you slice and dice the bill in a number of ways. If you are a Sprint customer, you'd be crazy not to get it. (A side word to Sprint cus-

tomers: Yes, we agree with you. Previous versions of Fonview were very complex, and we, too, got lost in the program trying to figure out our traffic. Because of that, we never used

Fonview and instead opted for AT&T's Billing Edge since it was so darn easy to use and informative — and still is.)

Sprint's custom reporting package still is a little weak, especially compared with AT&T's ability to reuse existing reports as templates for customerdesigned reporting. And the rebilling package seems far more targeted toward carrier rebillers than telecommunications departments. If you need either of these intensively, AT&T's package is

The RBOCs are getting into the act, too, although several of their offerings are still in beta test. From the sound of it, NYNEX has a sophisticated product coming to market, although its betatest period seems to be longer than projected. Bell Atlantic's new product also holds promise. Unfortunately, most of the other carrier products are either DOS-based or too basic to have graduated from Electronic Billing 101.

If you're not using a PC-based package and are still hopelessly lost in your paper, we encourage you to call your carrier now and see what it has to offer.

Briere is president and Heckart is director of broadband with TeleChoice, Inc., a consultancy in Verona, N.J. They can be reached at danny\_briere@telechoice.com or christine\_heckart@telechoice.com. They share this space with Scott Bradner, whose column will appear

# **Business Briefs**

Telecommunications resellers took the top two positions in Inc. magazine's list of the 500 fastest growing privately held U.S. companies. The No. 1 position was held by The Furst Group, Inc. of Shamong, N.J., and the No. 2 position by Telegroup, Inc. of Fairfield, Iowa.

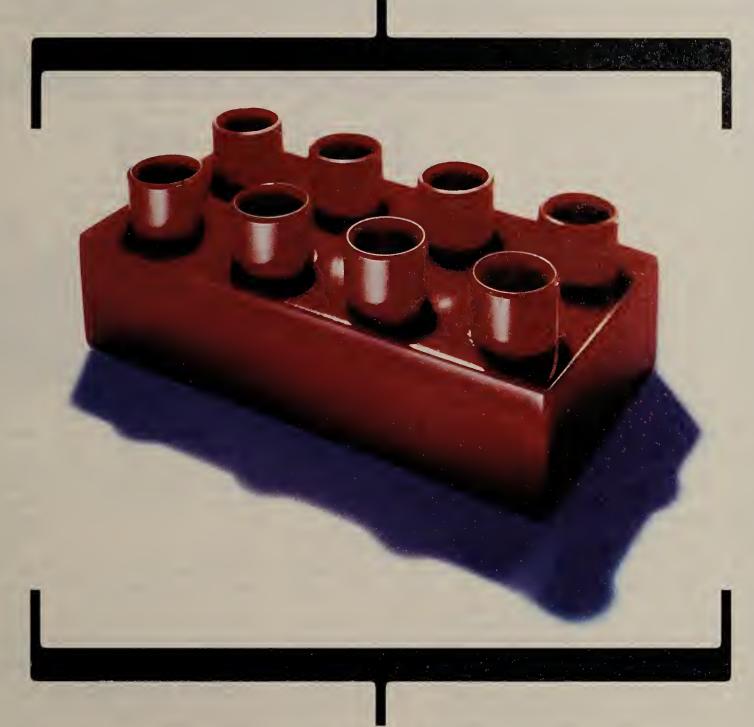
Help desk consulting firm The Bentley Co. has decided to use ACSYS Corp.'s NetGain outsourcing services for remote LAN management and application support, ACSYS said last week. The Bentley Co. now has a "hot button" programmed on each user's telephone, which they can push when in distress to be connected to ACSYS' NetCenter central support site.

AT&T Wireless Services, Inc., Pacific Bell Mobile Services, Inc. and Wildfire Communications, Inc. last week announced a development partnership

to create a carrier-scale Wildfire electronic messaging assistant for deployment in the carriers' networks in early 1997. The current Wildfire system can handle 24 DSO phone lines with a server fed by a T-1 line. Wildfire handles voice mail, forwards messages, rings reminders to the user and can place calls using voice recognition.



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# Special Focus

IPng DIRECTIONS

# Is IPng at a fork in the road?

Developers claim that migration from the current version of TCP/IP is at a crossroads.

### **By Michael Cooney**

The question seems straightforward enough: Would you buy a new car with fancy new gadgetry or fix the one you already have?

This same question is being applied to a more complex matter: the migration from the current version of TCP/IP to the next.

The maze of developers, vendors and industry visionaries developing pieces of next-generation IP—known as IPng or IPv6—say their development efforts are at a crossroads. One road leads to the promise of bigger and better things, while the other is heading to more of a rest stop.

Backers of IPng say it is moving along and implementation will ultimately become widespread, though they are loath to predict exactly when that might be.

However, vendors such as Cisco Systems, Inc. and others that are beginning to build prototype products say there will be test-bed implementations by the end of the year.

### The other side

While slow and steady theoretically might win the race, analysts point to a number of hurdles. Modifications to the current version of TCP/IP — known as IPv4 — complacency, and an unwillingness on the part of vendors and users to move off of the tried and true have formed

an information highway speed bump, slowing down IPng's journey to industry-standard nirvana.

"The reason IPng development has slowed is that the driving forces, such as the addressing issues, have been temporarily satisfied," said Peter Long, Internetwork Operating System product manager with

Scott Bradner, a "The reason IPng consultant with Harhas slowed is that vard University's Office of Information the driving forces, Technology, such as the addressthat while IPng development may be ing issues, have been going slower than temporarily satismany had hoped, IPng enhancements fied,"said — such as the larger PeterLong. address space — are really not possible

for IPv4, and this will spell its demise down the road.

## What's new

In September, IPng development took what observers said were giant steps forward.

In particular, four essential parts of the protocol were approved by the Internet Engineering Special Interest Group as Proposed Standards, meaning they are far enough along to begin implementing.

These new features include the IPv6 specification, which includes the new, much-anticipated 128-bit address space support and protocol header simplification techniques that describe how packets are processed and sent around a large TCP/IP net.

Expanded address facilities are probably the biggest reason for IPng's existence.

Increasing IPv4's 32-bit addressing scheme to 128 bits will provide for a greater number of

nodes per network and easier autoconfiguration of addresses, as well as allow IPng networks to be much more scalable than today's IP implementations.

The current IPv4 has a theoretical limit of 4.3 billion addresses, noted Cisco's Long. At first glance, this should be enough for every-

one. But in reality, only 5% of the allocated address space is used, so a huge amount is wasted, he said.

One fundamental cause of this problem is the lack of a network class of a size that is appropriate for a midsize organization, Long said.

Class C, with a maximum of 254 host addresses, is too small, while Class B, which allows as many as 65,534 addresses, is too large. The result is inefficient utilization of Class B network numbers.

Originally, it was predicted that the Internet would run out of addresses by 1994.

A variety of work has transpired to prevent that from happening, such as Network Address Translation and Classless Interdomain Routing, which have allowed the Internet and TCP/IP to move forward — at least for now.

Still, addresses may run out by the year 2004, according to experts.

Other new proposed standard technology would prioritize the flow of traffic through an IP backbone. Known as Flow Labeling, the feature will provide a standard way for workstations or hosts to specify special handling for certain dedicated traffic.

The feature is key if TCP/IP is to handle future multimedia and

other interactive applications in the future.

### What's missing?

Everyone agrees that the biggest missing piece of IPng is the transition mechanism that helps you migrate from IPv4 to IPv6.

"Without the transition mechanism firmly defined and in place, conversion from IPv4 to IPv6 just won't occur," said Jim Bound, IPv6 architect with Digital Equipment Corp.

According to Dana Rasmussen, product-line manager for LAN protocols with Bay Networks, Inc., transitioning to IPng will not occur all at once for most users. Rather, IPng will employ an encapsulation technique that will tunnel IPv4 traffic through IPv6 nets.

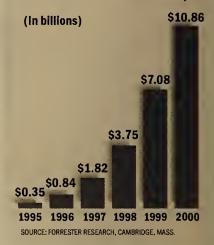
Bill Fink, an operations manager with NASA's operational internet, recently said he does not "think it wise to [view] the transition as just a painful phase we'll have to endure enroute to a pure IPng environment since the transition/coexistence period undoubtedly will last at least a decade and may very well continue for the entire lifetime of IPng."

### Now what?

In the end, IPng will help users because it should be much more easy to configure devices conforming to its definitions and it addresses some big-picture



By the year 2000, Internet-related hardware, software and services will be worth more than \$10 billion. The market is about \$350 million today.



items, such as security and TCP/IP addressing shortages.

Bradner said about 85% of the IPng documentation is complete, but others vary on the percentage of work that remains to be done.

"IPng is incomplete to the extent that its most compelling pieces — such as transition mechanisms — are incomplete, which, in turn, makes it unattractive to users," said John Tavs, the technical lead for IBM's TCP/IP development.

"We do expect to see work far enough along by next year to see some implementations, but I don't expect to see anything commercially available," he added. n

# A work in progress

wide variety of IPng work is going on inside the Internet Engineering Task Force (IETF) to develop the protocol, including:

n Neighbor Discovery. Hosts and routers use this to determine the link-layer addresses for "neighbors" known to reside on attached links. Hosts also use Neighbor Discovery to find neighboring routers that are willing to forward packets on their behalf. Nodes use the protocol to actively keep track of which neighbors are reachable and which are not, as well as to detect changed link-layer addresses.

n Autoconfiguration. One of the basic requirements of plug-andplay operation is that a host must be able to locate an address dynamically, either when attaching to a network for the first time or when a host needs to be contacted. A working group within the IETF is designing an autoconfiguration protocol that allocates addresses dynamically to IPv6 hosts.

n Transmission of IPv6 packets over Ethernet, token-ring and FDDI networks. Work is under way to define the frame format for transmission of IPv6 packets and the method of forming IPv6 link-local addresses on Ethernet, token-ring and FDDI networks. The definition will include ways in which devices can find local or remote devices on these nets.

n **Security.** Development is under way to define howvendors should implement encryption and authentication within IPng packets.

## IPng class of 1995

### Companies that have announced IPng support this year:

Bay Networks	Will support static routing and next-hop resolution, configurable and automatic IPv6 over IPv4, configurable IPv6-over-IPv6 tunneling and a private IPv6 MIB.
Clsco	Engineering an implementation of IPv6 as part of its IOS software.
Digital	Doing an IPv6 implementation on Alpha workstations running Unix. It is also working on IPv6 for OpenVMS and Digital routers.
FTP Software	Implementing IPng on its TCP/IP stack.
Siemens Nixdorf	Supporting IPv6 for its BS2000 mainframe.
IBM	Building IPng into routing/communications products.
Mentat	Building IPv6 into Streams.
Penril Datability Networks	Putting full IPv6 capability into its bridge/router software.
Sun Microsystems	Developing IPv6 for Solaris 2.
Swedish Institute of	Implementing IPng in HP-UX for the HP Series 700.

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# Local Networks

**Covering:** Operating systems • LAN management Hubs • Switches • Adapters and other equipment

# **Briefs**

Apple Computer, Inc. of Cupertino, Calif., next month will ship a native PowerPC version of its AppleShare file- and print-sharing product, as well as updates to its AppleShare Client for Windows and PowerShare Collaboration Server software.

AppleShare 4.2 supports the Power-PC's Nubus and uses caching for better file-transfer performance and higher capacity. The revamped AppleShare Client for Windows 1.0.1 now supports LocalTalk and token-ring networks, as well as AppleTalk. PowerShare Collaboration Server 1.1 has more datatype import options, including  $support for\ Internet\ addresses$ from text.

AppleShare upgrades are available for \$199 with Apple Workgroup Servers and free to customers who licensed Apple-Share after Sept. 1. AppleShare Client for Windows 1.1 is free to current customers, and Power-Share updates cost \$75.

Apple: (800) 950-5382.

■ This month, Artisoft, Inc. expects to ship its LANtastic 32bit Client, which supports Windows 95 clients on LANtastic nets. It is an interim solution until the scheduled January release of LANtastic for Windows 95.

The 32-bit Client supports network managers who are adding Windows 95 systems to existing LANtastic networks and offers those clients full access to network resources. It is free of charge to current LANtastic users and will be posted on the company's bulletin board system and World-Wide Web page.

Artisoft: (602) 670-7100.

■ Microsoft Corp. of Redmond, Wash., last week released Microsoft Service for NetWare Directory Services software that

runs on Windows 95 clients.

The software will enable Windows 95 users to browse and log on to Novell, Inc.'s NetWare 4.X directory services as well as NetWare 2.X, 3.X and 4.X bindery

Microsoft: (800) 936-3500.

# 3Com moves to blend Chipcom products into line

### By Michael Csenger

Southborough, Mass.

3Com Corp. and its Integrated Systems Division (ISD) — formerly Chipcom Corp. — have sketched out an operation for joining their two product lines at the brain.

3Com's One Company, One Strategy, One Solution program was announced last week after the Chipcom buyout's formal close on Friday, Oct. 13. It calls for the symbiotic transplant of Chipcom's ONdemand network management system into

**MANAGEMENT MERGER** 

architecture, which combines

Architecture and 3Com's High

3Com will detail its Virtual Networking

Chipcom's Cornerstone Networking

Performance Scalable Networking.

1995

Chipcom's ONdemand Network Control System

(NCS) will be integrated and packaged with

3Com's Transcend management system.

November

December

3Com's Transcend management scheme.

The strategy will be fleshed out in coming months, but the two organizations have formed a plan and set its deadline for the end of next year. More announcements scheduled over the next couple of months will focus on equally daunting aspects of joining the products that 3Com now holds.

"The key thing is that 90 days into it we're not still debating what platforms to support under what name and whose control," said John Boyle, 3Com's vice president of business development.

Details announced last week pertained mostly to the net management functions that will bind

March

3Com will integrate

Second half

platforms.

its net management tools with

Chipcom's so they can handle

as ATM-based LAN emulation.

users' most pressing needs, such

1996

3Com will completely integrate

with Chipcom's across all

its network management systems

See 3Com, Chipcom, page 28

# A SLEW OF SERVER ANNOUNCEMENTS

### Clustering

- ▶ Will support clustering API under development by Microsoft and Digital.
- ▶ Will use upcoming clustering ability of Windows NT.
- ▶ Will adopt Tandem's ServerNet architecture to link servers.

### Service

- Digital to provide global support and sales channel.
- ▶ Will offer 7-day-a-week, 24-hour-a-day on-site support, enhanced multivendor phone support, and system installation, maintenance and consulting.

### Hardware

Introduced a new line of P6-based servers

# Compaq clusters with others to boost servers

## By Kevin Fogarty

Houston

Compaq Computer Corp. last week aired plans to better equip its servers for use in enterprise nets by making the computers more powerful and scalable, as well as by providing better support.

As expected, the company will incorporate technology from Tandem Computers, Inc. and Microsoft Corp. to add clustering to Compaq servers (*NW*, Oct. 16, page 1).

The deals with Microsoft and Tandem will give Compaq the

ability to compete with midrange computer vendors on both power and reliability, said Gary Stimac, senior vice president and general manager of Compaq's systems division.

The idea is to cluster Intel Corp.-based Compaq servers so tightly that they can provide greater power by sharing system resources and give better reliability by swapping tasks in case one of them crashes. The approach is less expensive than that of proprietary mid-range systems, Stimac said, since Compaq hardware is cheaper and users would be able to build a server array piece by piece.

Compaq is basing its upcoming Server Array on Tandem's ServerNet technology, which uses an Application Specific Integrated Circuit to route data among server components by the shortest path, rather than piping all data through a single

Compaq and Tandem will codevelop a set of PCI-based ServerNet cards for Compaq servers and a ServerNet-based router that will handle traffic among clustered Compaq servers.

Microsoft is working on a version of Windows NT that will support the array. It plans in mid-1996 to ship a version that allows automatic failover between servers, and a later version will support better resource sharing.

Compaq is also supporting an API under development by Microsoft and Digital Equipment Corp. that will provide a standard for operating systems to

'Switch on a chip' could shrink the cost of net gear

# By Michael Csenger

Sunnyvale, Calif.

MicroUnity Systems Engineering, Inc. last week unveiled a chip architecture that could pave the way for a new breed of inexpensive but powerful software-based networking products.

The MediaProcessor is the first chip designed specifically to handle broadband communications and multimedia applications, said Tony Stelliga, MicroUnity's vice president of marketing.

The signal processing, protocol conversion, data switching and radio frequency modulation that today requires a host of different components could be carried out by one MediaProcessor chip running a huge load of software, Stelliga said. The software could support all the functions of routers, switches and other types of equipment.

"What we've done is started with a clean sheet of paper and tailored a new type of chip for communications and multimedia processing," Stelliga said. "Vendors in this industry have never had a processor like this to work with, and we think it's going to bring some interesting change to the types of prod-

Grab a detailed diagram showing how the new chip works on Network World Fusion. Point your browser at http://www.nwfusion.com. From the main menu, select News+ then Local Networks.

ucts out there."

Network equipment vendors have always had to adopt chip technologies, such as Reduced Instruction Set Computing chips or Intel Corp. X86 processors, which are designed for generic computing environments, according to Stelliga. "If you look in the guts of a router, you'll find these processors tied together with expensive memory and custom silicon that adds a lot to the overall cost and complexity of a product," he said.

The MediaProcessor will run at 1 GHz, about 10 times faster than of high-end processors today. It uses a 128-bit data path, whereas Reduced Instruction

Set Computing chips use a 32-bit data path, so more information — such as voice and video — can be processed simultaneously.

High processing See Net gear, page 28

See Compaq, page 28

And reliability of a modular enterprise hub.

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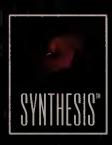
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# 30om, Chipcom Communed from page 25

the two product lines. Current product-line plans remain much as originally announced: Chipcom's ONcore and ONline prodncts will continue to evolve, while the Galactica switching system is phased out. Chipcom's ONsemble line of stackable hubs will yield to 3Com's SuperStack line. 3Com's high-end MultiServices Hub will continue to be developed, as will most of its stackable and chassis-based hubs and switches.

"This is a good opportunity for us to clean house of some lowvolume product lines," Boyle said.

### Net management unity

The management product merger will come about in three phases, the first of which is making Chipcom's ONdemand Network Control System (NCS) an application residing within Transcend.

By year-end, basic software packaging and interoperability hooks between the two systems will be complete. For example, both support similar Remote Monitoring capabilities that would be redundant in the end, and 3Com is figuring out how to

unbundle and reorganize those capabilities under Transcend.

'First we need to understand how they work and play together, and how to instruct customers to use them," said Doug Hyde, a senior product manager for the ex-Chipcom division.

Phase II, set to be completed by March 1996, will involve linking more of the systems' handson features. For example, both now have their own installation procedures that should turned into one, Hyde said.

"Phase II will be like moving between Microsoft Word and Excel on your PC," Hyde said. "With Phase III, [by the end of 1996], ONdemand will run more like a spell-checker under Word. You'd have to be told that ONdeniand was once a separate product in order to know it."

### ATM, IBM coming right up

3Com will divulge more of its hardware intent with yet another announcement — the Virtual Networking (VN) architecture — in a month or so, Boyle said. VN will rely heavily on Chipcom's Cornerstone Networking Architecture, which is a virtual LAN strategy for easing administration and otherwise tapping the potential of switching.

©ISD: (508) 624-6883.

### Video server display **Product Price Processor** No. of CPUs Sustained through-Video storage Serlal put rate (blt/sec) capacity (bytes) ports 50M 8.4G \$29,995 Sun MediaCenter 5 MicroSPARC-II SuperSPARC-II 16.8G 2 \$62,995 Sun MediaCenter 20 2 100M 400M \$279,995 Sun MediaCenter 1000E SuperSPARC+ 63G All products will ship in December.

# Sun tries to outshine rivals with video value

### By Jodi Cohen

Mountain View, Calif.

Sun Microsystems Computer Corp. (SMCC) has unveiled a new line of servers that allow users to cost-effectively deliver full-motion video streams across enterprise networks.

The new Sun MediaCenter systems range from workgroup to enterprise performance levels and are priced considerably less than video servers from competitors such as Hewlett-Packard Co., IBM and Silicon Graphics, Inc., according to one analyst.

Compaq

Continued from page 25

support server clustering and for applications to take advantage of it. Digital is supplying much of the underlying clustering technology Microsoft is building into Windows NT, sources

Digital will also boost Compaq's credibility as a global enterprise server vendor by providing worldwide service and support for Compaq products.

The Multivendor Customer Services di-

vision at Digital will act as the feet on the street for service programs sold by Compaq resellers.

Digital will employ its 22,000person worldwide support staff to provide 24-hour daily support, on-site service, capacity planning and other consulting services.

Compag desperately needs worldwide support coverage, and Digital is a good pick for a partner, said Helen Dragoon, analyst at International Data

Compaq desperately

needs worldwide

support coverage,

and Digital is a good

pickfor a partner,

said Helen Dragoon.

Corp. in Framingham, Mass.

Compaq also last week introduced a line of Pentiumbased servers, including: the fourprocessor ProLiant 4500 5/133, which starts at \$13,000; the ProLiant 4500 5/133 NT/Array,

which ships with Microsoft's BackOffice in its SmartStart bundle and starts at \$15,600; and the ProLiant 1500 5/133, a one-processor departmental server that starts at \$7,200.

©Compaq: (800) 888-5858.

# **RealityCheck**

### **Product**

MediaProcessor

# Company

**MicroUnity** 

### The benefits

▲ Designed for communications and media processing.

▲ Will have the processing power, onboard switching and software capacity to enable new software-based product lines.

Products based on the processor could be updated via software downloads.

### The drawback

▼ Network equipment vendors are already committed to products based on custom ASICs running proprietary code.

# The user view

"MicroUnity is talking about taking the complexity of today's equipment and boiling it down to one or two chips. The big question will be, how easy is it for developers to write software for this stuff?'

Milo Medin

# Net gear Continued from page 25

speed and a wide data path give the chip a total throughput of about 500G bit/sec, which is about 100 times faster than the processors running switches and routers today, Stelliga said.

"You could run a network operating system on this chip, supporting thousands of users, with room to spare for switching at gigabit speeds," he said. "And you could completely change the functionality of any particular unit by just downloading new software code over the network; you could conceivably migrate from a router to a switch without having to touch the box."

That seems far-fetched, but it is possible, according to analysts.

"What they're talking about is technically feasible, but the question is whether they can produce this thing in volume at the right price," said Milo Medin, vice president of networking for @Home, Inc., a company building the broadband Internet backbone for cable companies across the country.

The MediaProcessor will be ready for early development by mid-1996, with general production scheduled for early 1997.

OMicroUnity: (408) 734-8100.

# **Business Briefs**



Microsoft Corp. last week posted a 62% jump in fiscal first-quarter revenue from \$1.25 billion last year to \$2.02 billion this year. Earnings skyrocketed 58% from \$316 million to \$499 million. The company attributed its strong financial showing largely to better than expected sales of Windows 95.

Sun Microsystems, inc. of Mountain View, Calif., last week reported earnings of \$84.7 million for the first quarter of its

fiscal year, more than double the \$38.4 million it posted in the first period last year. Sun representatives said quarterly sales were up 17% to \$1.49 billion from \$1.27 billion in the first quarter of 1994. Sun attributed the positive results to several aggressive product introductions, including the Hot Java and Sunscreen Internet software tools, as well as a new line of video servers.

Earnings for hub and switch maker Bay Networks, Inc. of Santa Clara, Calif., were up 66% in the first quarter of the company's fiscal year, rising from \$37 million to \$61.4 million. Bay last week posted first-quarter revenue of \$438.3 million, a jump of 46% from the \$299.6 million in revenue amassed during the first period last year.

"I'd say [SMCC] is about onethird less expensive than existing video servers," said Jay Bretzmann, director of worldwide systems research at International Data Corp. (IDC), a consultancy in Framingham, Mass. "This is a case of a strong networking company trying to open up the video market sooner than expected with good product and aggressive pricing.'

According to a recent report, IDC expects worldwide media server revenues to hit \$340 million this year and to climb to about \$2.2 billion in 1998.

### Video variety

SMCC's Sun MediaCenter product suite includes three new servers, which feature video software, device drivers and fast Ethernet and Asynchronous Transfer Mode net interfaces.

The server hangs from a switch or hub via a 100M bit/sec Ethernet or 155M bit/sec ATM port and provides any connected device with a video link.

For workgroups, the Sun MediaCenter 5 delivers as many as 12 MPEG-2 concurrent video streams at a sustained throughput rate of 50M bit/sec. The entry-level configuration includes 8.4G bytes of video storage, which provides capacity for six 30-minute video-on-demand MPEG-2 titles.

The Sun MediaCenter 20 is well-suited for small to midsize organizations. The server, which employs two SuperSPARC-II processors, supports as many as 25 MPEG-2 concurrent streams with a sustained throughput of 100M bit/sec. The system's 16.8G-byte media storage array has capacity for 12 30-minute MPEG-2 titles.

For large department and enterprise environments, SMCC offers the Sun MediaCenter 1000E. The video server reaches 100 concurrent MPEG-2 streams at a total throughput of 400M bit/sec. The Sun MediaCenter 1000E incorporates four Super-SPARC+ CPUs and a 63G-byte media storage array with the ability to store and deliver 50 30-minute MPEG-2 titles.

©SMCC: (415) 960-1300.



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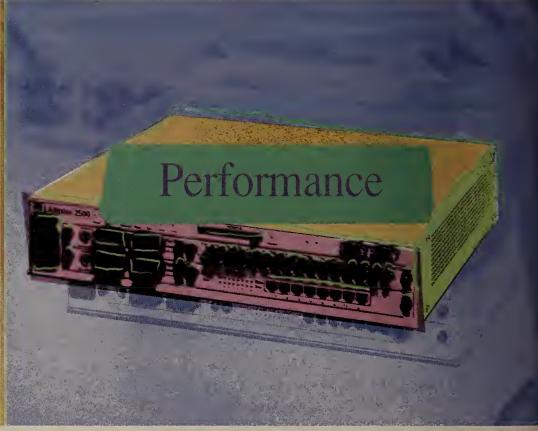


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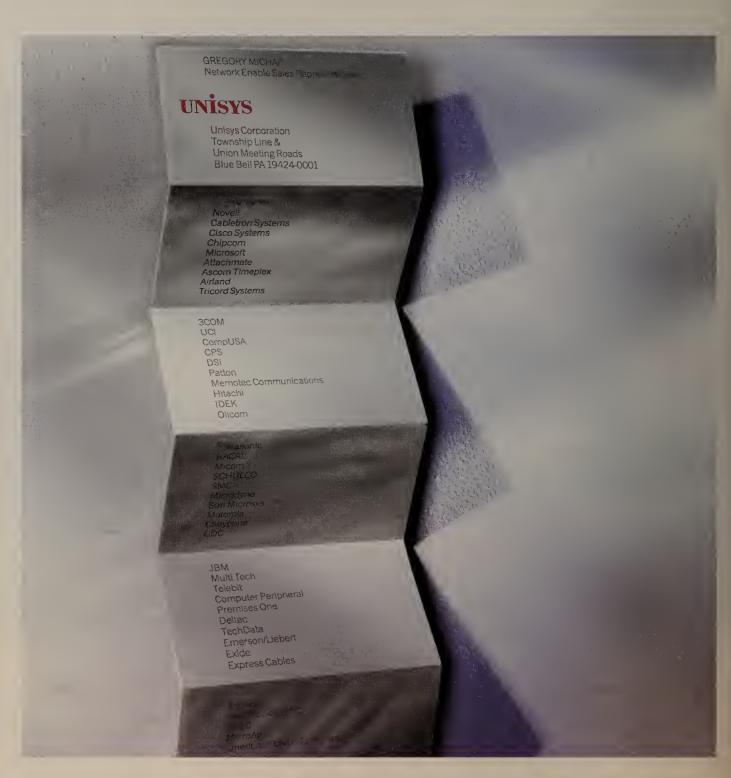
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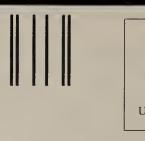


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**NET RESULTS** 

#### Fast times in the Ethernet market

s analysts, we pride ourselves on being the ultimate user advocates, especially when it comes to helping net managers wade through the huge amount of marketing pabulum vendors tend to spew.

Well, in fast Ethernet and 100VG-Any-LAN, we've hit the mother lode. Three recent news items caught our attention and compelled us to revisit this highspeed controversy that refuses to go away: Cisco Systems, Inc. bought Grand Junction Networks, Inc.; three firms released 100VG-AnyLAN market figures; and the Fast Ethernet Alliance broke up.

Let's be clear here. Cisco buying Grand Junction was a tremendous blow to 100VG-AnyLAN. Hewlett-Packard Co. vehemently denies that, and Cisco will never admit it either. But one of the supposed major players behind 100VG-Any-LAN was Cisco, so when it turns around and acquires the fast Ethernet pioneer, you can assume where the company's priorities are.

Cisco will deliver some 100VG-Any-LAN products, but its interest in fast Ethernet is far more long-term and committed. When the firm decided to plunk down about \$350 million, it put the money on fast Ethernet.

Melinda Le Baron panies released

But hold on, HP says. Have you seen the most recent market figures? And indeed, those figures are compelling. Three of number-Skip MacAskill and crunching comstatistics showing

100VG-AnyLAN has roughly three-quarters of the 100M bit/sec market (excluding FDDI) through July of this year.

Essentially, those firms indicate that of all the 100Base-T and 100VG-AnyLAN hub/switch ports shipped in the first six months of this year, three out of four were 100VG-AnyLAN ports. That's impressive. But those figures are not really surprising since the 100VG-AnyLAN products went to market before the 100Base-T ones.

This is troubling since HP is responsible for probably more than 70% of all the 100VG-AnyLAN products that shipped. While that's good for HP, it points to a perilous imbalance in the market. Despite its size and reach, HP cannot shoulder the burden of 100V G-AnyLAN alone.

So while the initial figures are positive, we wonder how long they will hold up. Can a technology that provides Ethernet (and, incidentally, token-ring) users with an upgrade path to 100M bit/sec succeed in the long term if the two leading Ethernet vendors — 3Com Corp. and Bay Networks, Inc. — don't even support it? What happens when the other big names in the 100VG-AnyLAN camp — Cabletron Systems, Inc. and IBM — also show little interest in the technology publicly?

These early market figures apparently have not affected the 100Base-T players, who recently disbanded the Fast Ethernet Alliance by declaring: Our work here is

The 100Base-T standard is finalized

and vendors can now freely build products to those standards, so the usefulness of the alliance was dwindling. Since the end-user education process is complete and the vendors who worked so closely to push the standard through are now competing with one another to gain a foothold in the fledging fast Ethernet market, the alliance's mission was realized.

For users, here's the upshot of these events: There is room for both 100Base-T

and 100VG-AnyLAN in the campus LAN marketplace. Evaluate technology based on its usefulness to you; don't get caught up in the politics or numbers games.

MacAskill is a senior research analyst and Le Baron is a research director in Gartner Group, Inc.'s Network Computing Infrastructure group. They can be reached by E-mail at inquiry@gartner.com or by phone at (203)



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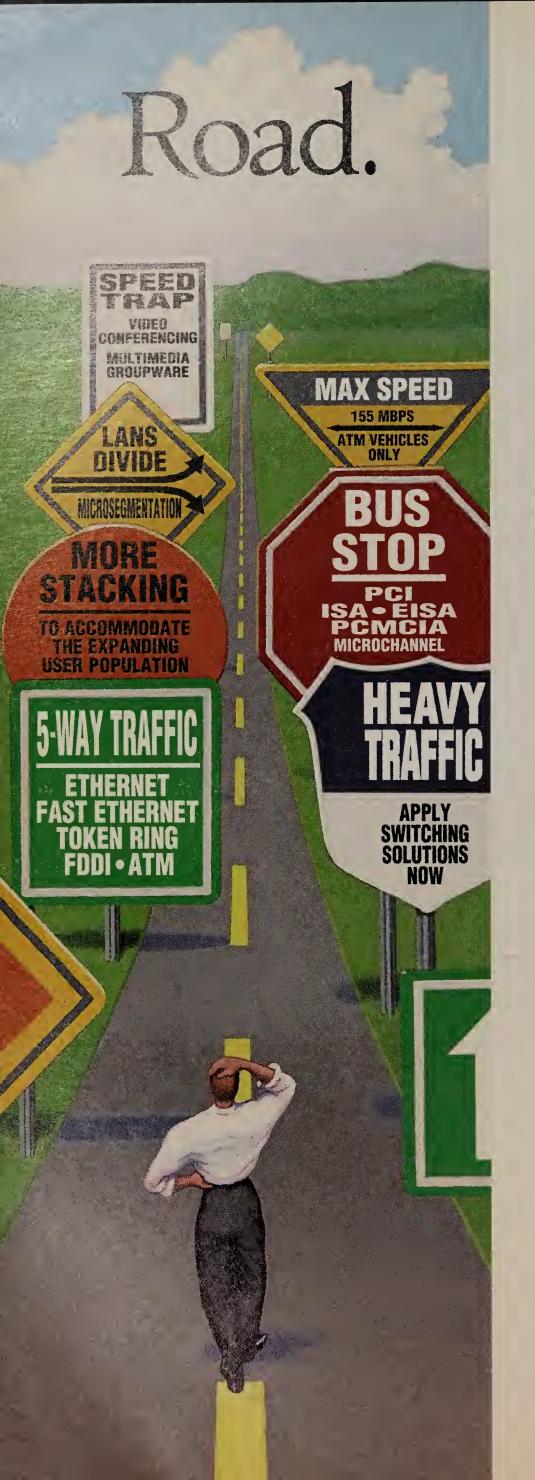
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ATM, HSSI, FDDI

## Client/Server Applications

**Covering:** Databases • Messaging • Groupware Conferencing • Imaging • Multimedia • Development

#### **Briefs**

■ VideoServer, Inc. of Lexington, Mass., this week will announce a T.120 standard-compliant data conferencing server that also supports audio and videoconferencing. The Video-Server Multimedia 440 server lets users view, annotate and change spreadsheet data, text and graphics. The servers can be linked via T-1, E-1, ISDN, Internet and switched lines.

#### VideoServer annual revenue (in millions)



Available in December, pricing starts at \$11,000 for four conference points.

VideoServer: (617) 863-2300.

■ Novasoft Systems, Inc. of Burlington, Mass., will integrate its NovaManage workflow software with Lotus Development Corp. Notes groupware by the first half of 1996, which will let it access data in NovaManage systems from Notes desktops.

NovaSoft: (617) 221-0300.

■ Kenan Technologies, a division of Kenan Systems Corp. in Cambridge, Mass., is shipping Acumate ES Version 1.3, a multidimensional database and suite of tools for building decision support applications.

Pricing starts at \$25,000 for a five-user license.

Kenan Technologies: (617) 225-2224.

■ Digital Equipment Corp. of Maynard, Mass., is shipping Version 2.5 of TeamLinks, a desktop client application that now lets users access electronic mail, conferencing, calendaring and workflow services over nets and dialup lines.

Pricing ranges from \$55 per TeamLinks mail client to \$295 for the TeamLinks Office package. DEC: (508) 493-5111.

## Interleaf, Xerox aim to simplify document mgmt.

API allows Interleaf to integrate its products with others'.

DOCUMENT

MANAGEMENT

#### By John Cox

Waltham, Mass.

Interleaf, Inc. and Xerox Corp. have separately announced new systems for managing documents — from creation to distribution — over the network.

Interleaf last week outlined an effort to integrate its document management software with

that of other firms via a new API. Meanwhile, Xerox unveiled packaged systems, including scanners, printers

and client/server management tools.

The centerpiece of Interleaf's repackaged product line is Liason, a network-independent API that lets Interleaf and third-party products work together over a network. Such a system would cover everything from initial document creation on a desktop to management of document databases, to forming new collections of related documents and

then publishing them.

"Liason is a document API based on the Document Management Alliance's specification, which defines one API for document systems," said Paul English, vice president of product management at Interleaf here. "All of our tools will use this API, so our products and

those of other vendors can integrate and scale up."

Analysts said the plan makes sense.

"They're making a credible change to open up [existing] products so that people who need to integrate different pieces of a document management system can do this more easily," said Frank Gilbane, director of CAP Ventures, Inc., a Marshfield, Mass., market research and consulting firm.

The DMA specification, though not yet complete, should grow quickly in importance

because it is backed by the major document systems companies, he said.

Liason is part of Interleaf's revamped Intellecte product package, which blends several Interleaf products into a complete document management system.

The new version, called Intellecte/Access, also includes several other products, including Relational Document Manager (RDM) 2.6, a document management application built on an Oracle Corp. database. Liason 2.6 supports Windows NT clients

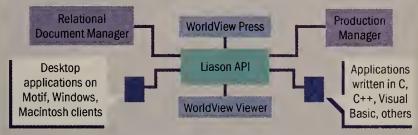
as well as full-text search and retrieval.

Interleaf also launched a consulting service called FastPath.

FastPath costs \$180,000, which includes products, consulting and training. Separately, Liason is priced at \$495 per developer and \$10,000 for an unlimited site license; RDM costs \$825 per Motif client, \$695 per Windows client and \$35,000 for the server software plus 16 client licenses.

Separately, Xerox unveiled its Document Center product fam-See Document mgmt., page 38

#### INTERLEAF'S END-TO-END DOCUMENT SYSTEM



Interleaf's API provides the glue between desktop applications such as WorldView Viewer and back-end ones such as WorldView Press and Production Manager, letting customers create searchable groupings of related data and build on-line document collections, respectively.

GRAPHIC BY TERRI MITCHEL

## ViewStar gazes into the OLE applications market

#### By Barb Cole

Alameda, Calif.

On the heels of announcing it will be acquired by Caere Corp.,

ViewStar Corp. last week rolled out new software that lets developers build workflow applications using OLE-compliant desktop tools.

ViewStar 4.2 includes Business Process Interface, a combination of APIs and OLE 2.0 controls for building View-Star applications with front-end tools such as

Microsoft Corp.'s Visual Basic and Borland International, Inc.'s Delphi.

Earlier versions of the software required developers to use ViewStar's application tools.

Another new feature of Version 4.2 is the ability to extend

workflows across multiple sites via Microsoft's Messaging Application Programming Interface. "[That] has taken away many

Make sense of workflow with a glossary of terms available via Network World Fusion.
Link to http://www.nwfusion.com. From the main menu, select News+ then

Client/Server Applications.

of the headaches associated with deploying enterprise-class [workflow] applications," said Scott McCready, director of image systems at International Data Corp. in Framingham,

See OLE apps, page 38

## New software plugs holes in PowerBuilder

#### By John Cox

Tampa, Fla.

A set of third-party tools introduced last week will fill some of the gaps in Powersoft Corp.'s PowerBuilder software development tool set.

PowerCerv Corp.'s PowerPerformance Series software is a set of object class libraries designed to help PowerBuilder customers create large-scale, distributed applications more easily.

Originally designed for graphical, departmental database applications, PowerBuilder has been stretched by users trying to build more complex systems. The PowerCerv tools help out by adding security and workflow features and a batch processing engine, said Daniel Challou, PowerCerv's assistant director for tools R&D.

The PowerPerformance Series has four tools to start with, including a new version of Pow-

erTool, an extensive object class library with ready-to-use Data-Window controls, menus and user objects.

The new version includes a methodology for building a framework that guides end users through numerous, complex PowerBuilderwindows.

One new tool is PadLock, a stand-alone GUI-based application for adding security controls to PowerBuilder clients.

In November, PowerCerv will add two more tools. FlowBuilder is a workflow scripting tool for managing the sequence of tasks done by various application processes. Users will no longer have to write custom workflow code for each new Power-Builder application, according to Challou.

The second tool to be added is BatchBuilder, which lets developers write scripts to execute and manage sequential batch processing jobs as part of a Power-Builder application.

PowerTool 4.1 and PadLock are available now, priced respectively at \$1,200 per developer and \$2,300 per server. Pricing for FlowBuilder and BatchBuilder will be announced next month.

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Solutions for a small planet<sup>™</sup>

## Atria client/server tool tracks changes to production software

By John Cox

Lexington, Mass.

As client/server applications get bigger, making changes to them becomes more complicated.

Atria Software, Inc. is preparing to beta-test an application development tool that tracks adds and changes to software due to bugs or the addition of newfeatures.

ClearTrack, announced last week, is a client/server offering that features a database for storing software change requests. Its graphical user interface-based front end lets managers attach an identifier to each request, assign the change to a software developer and then manage the workload and priorities of the development team so changes

#### Document mgmt.

Continued from page 35

ily, which is based on a software application called CenterWare. The software lets systems administrators monitor a range of document tasks and printing activities over the network.

The package includes client PC software, a Sun Microsystems, Inc. SPARCserver, and a selection of devices ranging from desktop scanners to large-scale enterprise printers and copiers.

The product line is intended to be a complete system for digi-

tizing, managing, tracking and distributing documents. Xerox will share the Document Center API and release software developers' kits, so third-party software vendors can integrate their applications with the new Xerox systems.

The Document Center System 20, available now, is aimed at workgroups of up to 20 people and costs \$19,495. System 35 is for groups as large as 50 and will be available by year-end for \$38,610.

©Interleaf: (617) 290-0710; Xerox: (800) 275-9376, Ext. 195. are made on schedule.

Atria also created an optional interface to its ClearCase software configuration management system for managing ap-

plication source code. When a developer makes source code changes and stores them in the Clear-Case repository, the system automatically updates ClearTrack so managers have a current status report of each change request.

ClearTrack is based on software originally developed by Silicon Graphics, Inc. for its own Unix-based development tools.

The database runs on a Unix server, and the client sits on a Unix workstation or Windows PC running X Window Server software. Atria is porting the software to additional Unix operating systems and, eventually, to Windows 95 and Windows NT.

Also, Atria is adding features

#### Atria Software's ClearTrack

What it does: Centrally manages all requests to fix software problems or add new features.

How it works: Change requests sent via E-mail to database; GUI client lets managers identify needed changes, assign work to developers, analyze database, and define change policies and

Highlight: Works with Atria's ClearCase software configuration manager so ClearTrack can record source code changes.

procedures.

**Lowlight:** Only runs on Unix initially; 32-bit Windows support is in the works.

Availability: First-quarter 1996

Price: \$795 per user; \$4,595 bundled with ClearCase

to the product's report writer and beefing up the database so it can run on larger platforms and handle more information.

With ClearTrack, development managers can modify the software's own change management process so it matches their specific needs.

For example, certain changes may need clearance by a software review committee before final approval.

In addition, the product's database query and reporting features let managers analyze information stored by Clear-Track, helping them to identify problem areas in an application or manage the developers' day-to-dayworkloads.

ClearTrack includes a process decription language, which is a scripting tool that lets users modify the change management process that is built into the product.

OAtria: (617) 676-2400.

#### \_\_\_\_

OLE apps
Continued from page 35

ViewStar 4.2 runs on Windows NT and Unix servers, and will be available by the end of the year. Pricing starts at \$35,000 for a 10-user license, including design and development tools.

#### WHAT THEY BRING TO THE TABLE

#### Caere

- Strong presence in the desktop market.
- Financial stability.
- Imaging, optical character recognition and forms recognition offerings.
- Strong distribution through retail channels.

#### ViewSta

- Production workflow software for large-scale applications.
- ▶ Well-developed reseller channels.
- Software runs on Unix and Windows NT, and supports multiple databases.

The new version of ViewStar, when combined with Caere's desktop optical character recognition software, will help users link desktop document imaging systems with production workflow applications, analysts said.

Caere's \$40 million, planned purchase of ViewStar will give the latter much-needed financial stability, observers said.

"ViewStar has been financed with venture capital, but there

have been some questions recently as to whether it could continue to secure new funds," said Connie Moore, an analyst at BIS Strategic Decisions, a market research firm in Norwell, Mass.

She said the financial stability of workflow providers is closely watched by customers since the

software tends to cross several departments and integrate with multiple systems across a network.

Earlier this month, officials at the privately held ViewStar confirmed that the company lost money in 1994 and has had two unprofitable quarters so far this year.

The ViewStar deal signifies the continued consolidation of the workflow and document management markets, analysts said.

In August, FileNet Corp., a supplier of high-end workflow software, completed its merger with Watermark Software, Inc., which sells document imaging software aimed at workgroups.

Around the same time, imaging giant Wang Laboratories, Inc. acquired Sigma Corp., which makes workflow software aimed at departmental users that runs on Windows NT.

©ViewStar: (510) 337-2000.

#### SHARED LOGIC

#### Building a data warehouse dream team

he highlight of last week's Systems 95 conference was supposed to be Bill Gates' appearance at the opening ceremonies, where he addressed about 800 guests from the upper echelon of Munich's business and government communities.

But the best of show for me was not the fact that Gates stopped by to put in a few plugs for Windows 95 and The Microsoft Network. Rather, it was the fact that Siemens Nixdorf InformationsSysteme AG and its newly acquired Pyramid Technology Corp. subsidiary have developed a data warehousing solution that may be the strongest offering on the market.

It is clear that Siemens, with the introduction of The Smart Warehouse, has accepted the fact that an effective data warehouse can only be achieved when multiple vendors put their heads together and create an integrated solution.

Data warehouses — which let companies give end users easy access to data gleaned from multiple databases — typically require new hardware, new software and consulting services, as well as changes to existing systems. In other words, they can really rock the boat.

Siemens is attacking the complexities of the data warehousing market with a refreshing logic: promote cooperation between complementary vendors, instead of trying to take over the whole market single-handedly.

The Smart Warehouse is actually a marketing agreement involving more than 25 companies worldwide, including database and database access companies such as Information Builders, Inc., Informix Software, Inc., Oracle Corp. and Sybase, Inc. In addition, Siemens — which will provide the data warehouse hardware — has recruited systems integrators, such as Coopers & Lybrand, as well as newcomers like ok?? Techgnosis, Inc.

How has Siemens gotten so many companies to

cooperate? The plan includes the creation of six data warehousing "centers of excellence" during the next 12 months that will provide an environment for the partners to work together on the development and integration of new data warehousing applications.

Siemens' size probably has not hurt its recruiting efforts, either. It is the largest European-based supplier of information technology and, in the last fiscal year, had revenue of about \$8.8 billion.

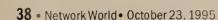
By acquiring Pyramid, Siemens not only added to its revenue base, but also obtained Pyramid's track record of successful data warehousing pro-

jects. One large company uses a Pyramid-based data warehouse that allows a pharmacist in any of its stores to rapidly access a customer's prescription history and fill an order.

It appears that Siemens has the financial clout as well as the data warehousing experience to pull off its plan. The company has shown it is willing to cooperate, selecting excellent partners.

If there is one thing wrong with this picture: There seems to be an assumption that consulting services will be required to create a customized data warehousing system architecture, tool suite and project methodology for each customer. The dream team is missing one key player — a vendor with a software-based methodology that would give customers a clear path to develop data warehouse architectures and systems on their own using The Smart Warehouse product suite. This would make Siemens' data warehousing dream come true.

Myers is president of Client/Server Connection, Ltd., a Cambridge, Mass., firm specializing in client/server software solutions. He can be reached at (800) 622-1108, Ext. 522, or via CompuServe at 71332,1726. Myers' column alternates in this space with that of META Group, Inc.'s Mike Rothman.



## Electronic Commerce

**Covering:** Tools and Techniques for Interenterprise Networking and Doing Business On-Line

#### **Briefs**

■ Silknet Software, Inc. is developing software for customer support that lets World-Wide Web users enter detailed support inquiries and receive answers automatically, without the need for human intervention. The Silknet Support Expert is priced at \$1,995. The offering will ship in December.

Silknet: (603) 625-0070.

■ According to The Vantive Corp., it is planning to ship a World-Wide Web tool kit that will let users publish any of the Vantive Enterprise suite of sales and help desk client/server applications on the Web. This will allow Vantive databases to be accessed through Web browsers. The tool kit, called Van-Web, will cost \$25,000 per server and ship in December.

■Atthistime, Saqqara Systems, Inc. is readying a World-Wide Web database integration tool kit, which is dubbed Step Search, that lets companies prepare Web-based electronic

Vantive: (408) 982-5700.

Saqqara Systems: (408) 738-4858.

■ NYNEX Corp. said it has expanded its World-Wide Web Interactive Yellow Pages to include a national listing of 16.5 million businesses nationwide.

The NYNEX yellow pages site, at www.niyp.com, now has ads for more than 2,500 businesses at rates that run from \$100 to \$3,000 annually.

Northern Telecom, inc.'s Entrust client/server security software has become the first security product to get the seal of approval for performance under the Federal Information Processing Standards and Publication 140-1. That is the security test standard adopted by both the Canadian and American governments.

### **On-line services seek** shelter from tax plan

By Ellen Messmer

Washington, D.C.

Under a newly proposed tax policy, anyone selling goods via the Internet or on-line service would have to charge customers state sales tax, regardless of whether the vendor has any operations in that state.

This is a burden far surpassing that for mail order, where sales taxes are charged only in those states where a company has locations, opponents recently argued.

The Multistate Tax Commission (MTC), the policy-setting organization for state tax rules, wants tax authorities to require businesses selling goods on-line to pay sales tax on items either mailed or distributed directly

**Taxation without representation?** problems the MTC is causing electronic commerce. Link to From the main menu, select News+ then Electronic Commerce. over a network to customers in all fifty states.

Critics of the MTC electronic commerce tax proposal say it could deal a fierce blow to budding on-line businesses.

"We should follow the mailorder model," said Bill Rollinson, vice president of marketing at the Internet Shopping Network. "We don't want to slow the electronic commerce model down by putting another barrier

Many point out that if states adopt the MTC plan, on-line businesses that distribute content digitally, whether it be reports, videos or software, would be required to somehow determine the physical location of on-line purchasers at the time

"These proposals are not workable," said Kaye Caldwell, president of the Computer Software Industry Forum and policy project director of the Software Industry Coalition. The proposed MTC rules would particularly force smaller companies with limited resources to meet new state-tax obligations, Caldwelladded.

The MTC will hold an indus-

try forum here on Nov. 8 to discuss its plan, which says states should apply state tax rules on any business that has a "telecommunications linkage that per-

mits the out-of-state business to establish and maintain a market in the taxing

"Our position is that if someone uses a value-added network — which is what AOL, Prodigy or CompuServe are - they have pricommunications nodes in every state," said Paull Mines, attorney at the MTC.

Mines said the multinetworked Internet raises the issue of inherent reciprocity — if you join

in, you're providing access which would also fall under the MTC's tax proposal, now in draft

"We don't want

tax laws that

commerce."

Bill Rollinson

slow electronic

Tax experts said the MTC is stretching the meaning of tax case law in a bid to drum up revenues for states.

'The issue is what is called 'substantial nexus,' the idea you have to have property, employees or agents in a state to be liable for payment of state taxes," said Amy Eisenstadt, KPMG Peat Marwick director of state tax research and analysis.

In the landmark mail-order case of Quill Corp. vs. North Dakota, the Supreme Court decided the vendor had to have some definite link, such as physi-

> cal presence in a state, before a state could impose a sales and use tax obligation on a vendor.

"The MTC is pushing the envelope on the concept of 'deemed physical presence' to include telecommunications linkage," Eisenstadt said.

With the exception of California, where a decision was made not to tax software sold over a modem, very few states appear to have tackled the thorny issue of on-line sales.

On-line businesses say they are following the mail-order tax model by default.

"We pay taxes in Connecticut where we are headquartered and Ohio where we have database operations," said Rick Fernandes, president of CUC International, Inc., which recently opened its Internet cybermall Shoppers Advantage after years of retail operations on Compu-Serve, Inc. and America Online, Inc. Similarly, NECX Direct only pays sales tax for goods sold in its home state.



#### Running to stay in place

ast week, we talked about an interest- like The Similarities Engine. These advanced ing new service on the Internet, The Similarities Engine, that attempts to figure out which recording artists you might like based on a list of your favorites.

The technology behind this service represents what will be the foundation of the second generation of Internet search engines. The first generation was typified by Yahoo and Lycos, which give you what you ask for but no more.

For example, if you

want to find out about aerodynamics, you won't be shown sites about kites unless the site uses the term "aerodynamics."

tools will rely on metadata — data about data (what some people might call knowledge). This means that aerodynamics is concerned with things that fly, and things that fly

includes kites, and all this is part of the information that can be used to draw conclusions.

When combined with the complex databases compiled by Lycos and Yahoo, the potential for more productive research is intriguing. This, of course, raises the

issue of what the third-generation search services will look like.

My bet is that soon, we'll see real artificial Second-generation Internet search ser- intelligence systems underlying the search. vices will be quite different and a lot more For instance, there is a research project

called CYC that involves a roomful of equipment being "taught" to use common sense.

Unfortunately, I don't have enough space to go into much of what CYC might achieve other than to say that it could lead to machine understanding of Web content in a "deep" way. What it would do is "understand" that aerodynamics and kites were related conceptually.

The second generation of Internet search engines will start appearing in the next 12 months, and the third-generation ones in two or three years.

Now lest you think that these systems will kill off the "but the 'Net is soooo complicated I can't find anything" whiners, just consider that the Internet's complexity is increasing exponentially. We need these new tools just to keep things from getting more complex. It is like running as fast as you can so you don't go backward.

Gibbs wants to know whether you have bought anything over the Internet yet. Let him know at mgibbs@gibbs.com or call him at (800) 622-1108, Ext. 504.



Mark Gibbs



## Participating Companies Include:

Aironet Wireless Communications Attachmate Corp.

Bay Networks

Cheyenne Software

**Ergo Computing** 

Hewlett-Packard

Micom Communications

Mobile Office Magazine

MobileWare

**Mounting Solutions** 

**Norand Corporation** 

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Development Corp.

Pen Computing Magazine

Peripheral Vision Limited

**PERLE Systems** 

Persoft, Inc.

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Renex Corp.

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TechSmith Corp.

TeleAdapt

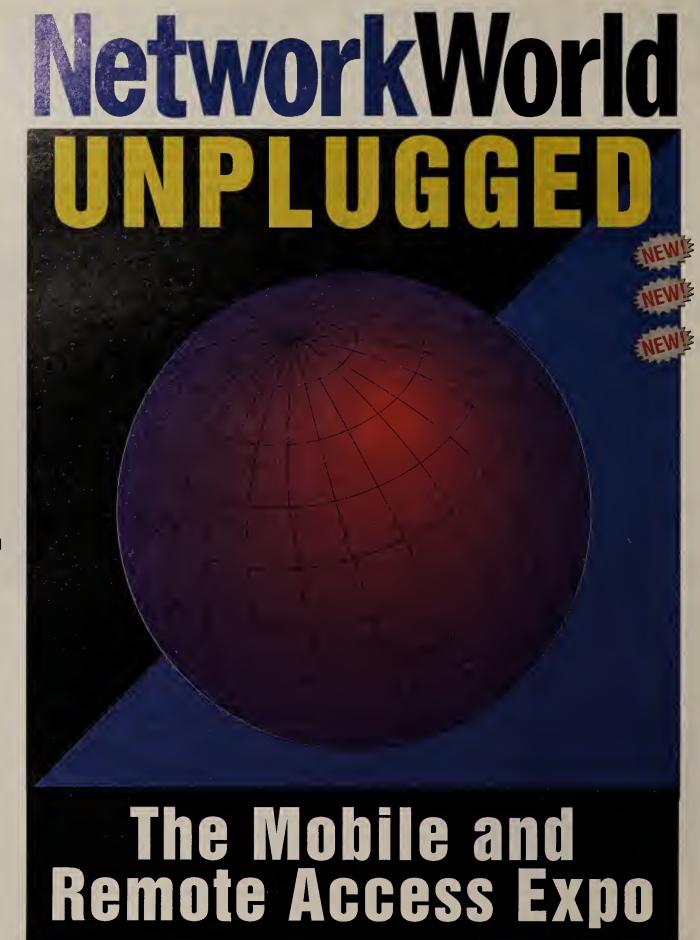
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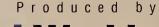
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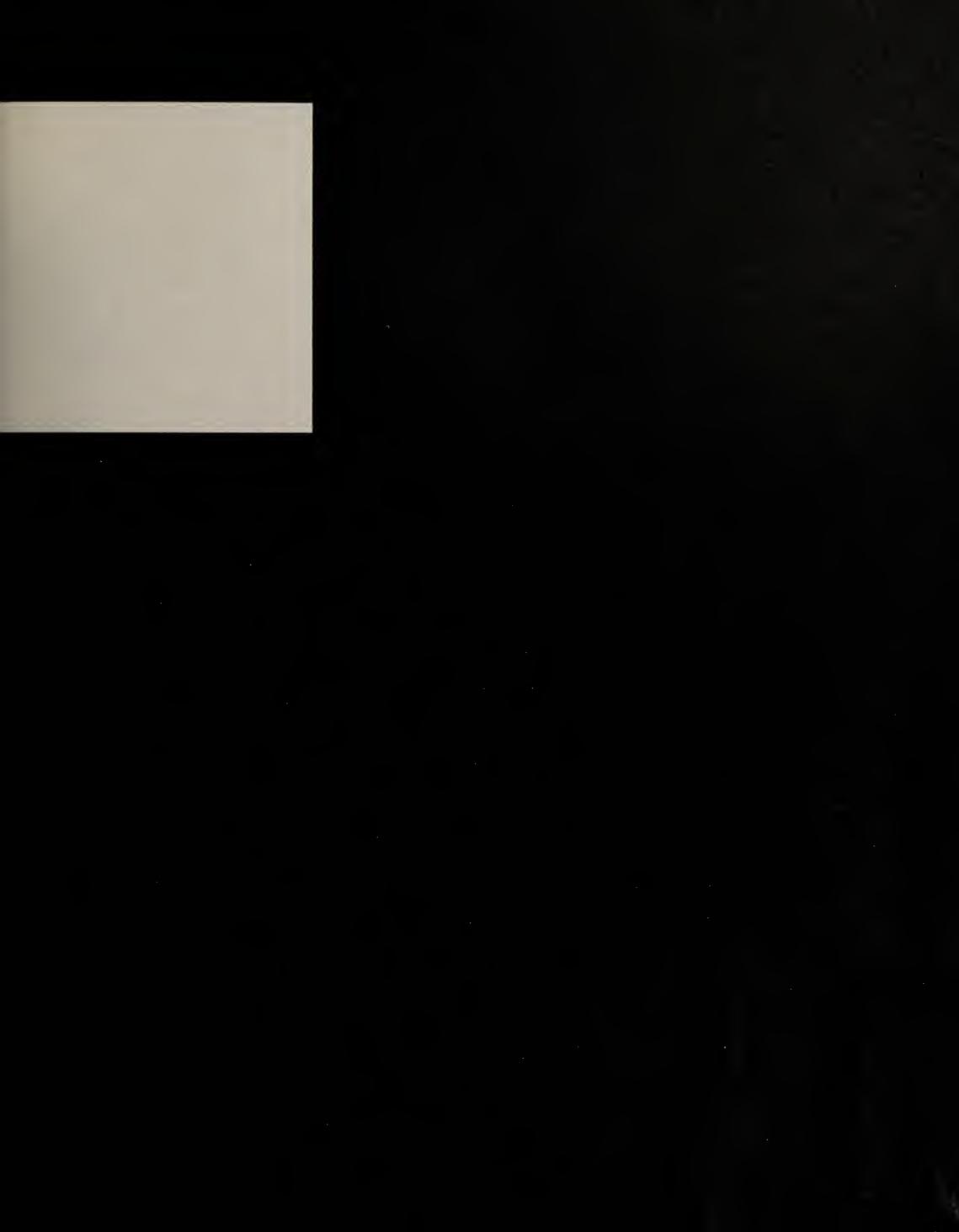


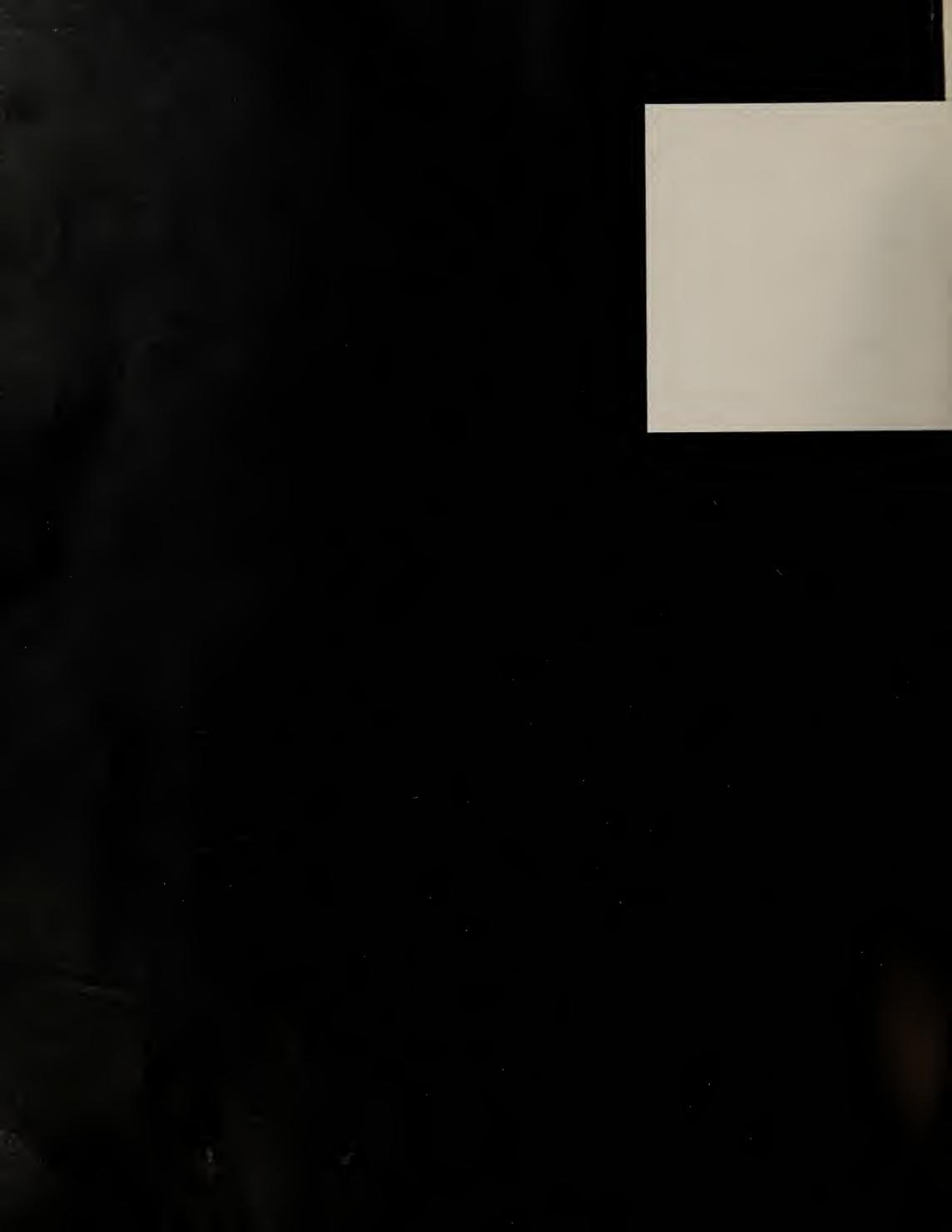
PEN COMPUTING











## Technology Update

Keeping Up with Network Technologies and Standards

#### NETWORK HELP DESK

Network World tracks down answers to your questions. Please submit them to Dana Thorat via phone at (800) 622-1108, the Internet at djt@world.std.com or fax at (508) 820-1103.

From time to time, we'll summarize a case history pulled from the Help Desk Forum on Network World Fusion. Here's one:

Our school uses Dayna Communications, Inc.'s Mini Ether Print Plus devices to connect our Hewlett-Packard Co. DeskWriter 540C Local-Talk printers to a 10Base-T Ethernet.

When we select one of these printers from the Apple Computer, Inc. MacIntosh Chooser, they appear to be off-line or busy when they're actually available. Do you know what the problem might be?

Bruce Esser, Omaha, Neb.

In response to Esser's question, we mentioned that Dayna Communications recommends using LocalTalk or PhoneNet connectors with external terminators when connecting certain HP printers to its product. These connectors help some of Dayna's products handle the impedance requirements of certain HP printers.

We also pointed out that HP says its DeskWriter 540C works best if its output is kept to 2,000 pages per month, a figure HP feels can be quickly exceeded if the printer is network-attached.

Esser told us he already had his four HP 540C printers connected with Farallon's PhoneNet connectors with external terminators. The problem persisted.

He installed an Asante Technologies, Inc. Ethernet-to-LocalTalk converter. He then attached two printers to each of the two Dayna devices. The Asante device worked, and the Dayna boxes were able to handle the two HP printers.

Esser also said his print volume is 500 pages a month, far under the printer's recommended limit of 2,000 pages a month.

#### Jess To

If you want to join in on this discussion or start one of your own, point your Web browser at http://www.nwfusion.com. Once you log in, select Forum to go to the Help Desk Forum.

## Avoid problems: Know your frame relay net

#### By Rod Unverrich

Frame relay acceptance and usage are growing by leaps and bounds. This phenomenon makes it important to monitor, analyze and establish baselines for frame relay circuits to ensure optimal network performance and avoid congestion.

Since frame relay services are sensitive to congestion, it is important to understand how they operate in high-traffic situations. As congestion becomes severe, network delay increases dramatically. This is primarily because frame relay does not

have local flow control, such as is found in X.25 packet switching.

While the lack of local flow control increases the chance of congestion, it actually is a key benefit of the frame relay protocol. It makes processing a frame relay frame fast and simple: Invalid frames are discarded, and valid frames are processed further only to ensure that the destination is a real Data Link Connection Identifier (DLCI).

In order to maintain the integrity of a frame relay circuit, it helps to analyze transmissions

and establish a baseline. If frame relay data needs to be retransmitted, the throughput on the circuit suffers greatly because retransmission must occur end to end in the network.

#### **Congestion notification**

Two methods are used to identify congestion on frame relay circuits. The first is specific notification of congestion through Backward Explicit Congestion Notification (BECN), Forward Explicit Congestion Notification (FECN) and Consolidated Link Layer Management (CLLM) frames. The second is by analyzing the upper layer protocols to identify retransmission during high-traffic loading on the network.

Frame relay networks notify the network manager of congestion by transmitting frames with the FECN and BECN bits set. This informs the user to temporarily slow down the data transmission. FECN indicates congestion for traffic in the same direction as the notification, while BECN indicates congestion in the opposite direction.

Although congestion notification bits are important indicators, responding to this notification is optional and rarely implemented. If data is continually transmitted at high data rates during periods of congestion, some of it will be discarded.

The idea behind FECN and BECN is that devices along the

is out of memory.

As the network becomes congested, it must take action to reduce the traffic. One such method is to get rid of frames with the Discard Eligibility (DE) bit set. A baseline for the percentage of DE frames relative to the traffic load can indicate the network congestion level. The baseline indicates the potential number of frames that would need to be retransmitted as a result of congestion.

Since frame relay cannot retransmit frames, upper layer protocols must do so. This to transmit data through the network. It is measured in bits per second and is not related to the physical transport of bandwidth. The network guarantees delivery of data transmitted at a rate slower than the CIR.

Bc is the maximum data rate in bits per second that can exceed the CIR for a given time interval.

It is essential to measure and establish a baseline for the CIR and Bc. When the data rate exceeds the CIR, information can potentially be discarded regardless of its importance.

To get an accurate measure of how the circuit is being used, network managers should use a protocol analyzer to gather CIR information on a frame relay circuit. Analyzing data gathered over a week will give the best results.

Analyzing the network by establishing baselines for FECN, BECN and CLLM frames and CIR utilization will show if congestion is present. Once congestion has been identified, the network manager must determine its source and cause.

The first step in pinpointing congestion is analyzing DLCIs to determine whether a group or a single DLCI is responsible. Because frame relay typically is used to interconnect LANs, analyzing the data transmitted over the DLCI will provide clues about the cause of congestion.

For example, viewing protocol usage may reveal that an excessive amount of File Transfer Protocol (FTP) traffic is on the network, and that this traffic is generated from a single user. Trough the analysis, the network manager knows to either increase the network bandwidth ot request that the FTP transfer be performed during low utilization times.

Unverrich is R&D product manager at Hewlett-Packard Co.'s Network Test Division in Colorado Springs. HP makes a frame relay analyzer.

#### **UP CLOSE** The Backward The Forward Explicit Congestion **Explicit Congestion** Notification bit tells the remote user Notification bit notifies the user of Frame relay that network congestion was congestion in the encountered by the frame transmitted return path. congestion across the physical media. control The address field of **Data Link Connection** FECN BECN DE O DLCI a frame relay frame **Identifier** accommodates congestion Address field control signaling through The Discard Eligibility bit is used by carriers to determine what data to discard three bits: if network conditions make it necessary to do so. When set at 1, this bit indicates

at 0 get a higher priority during congested periods.

congested path could take action to reduce congestion. These notifications are only in user data, which could potentially be an issue if data is only being sent in one direction. BECN could not be sent to the source. For this reason, end devices transmit CLLM messages to indicate congestion.

DLCIs that are directly responsible for congestion typically have the FECN and BECN bits set. Though most networks will experience temporary congestion resulting in FECN and BECN frames, it is important to record a baseline for the percentage of those frames relative to the traffic load. This allows the network manager to determine if the network is experiencing greater-than-normal congestion. The congestion may be a result of a temporary burst of traffic, a network out of bandwidth or a device, such as a computer, that increases network loading but decreases actual throughput. Monitoring the congestion notification within the network will minimize frame retransmission.

#### **Traffic commitments**

that the frame should be discarded during congestion conditions. Frames set

Since frame relay has no local flow control or any method for restricting a user from transmitting data, one of its main advantages is its ability to handle bursty applications. Users can send as much data as possible at any given moment to take full advantage of the bandwidth on a frame relay circuit.

While beneficial for users, this is a disadvantage for the circuit provider trying to measure capacity. For this reason, the frame relay standard provides for the establishment of a committed information rate (CIR) and a committed burst size (Bc).

The ClR is a static rate at which the user expects to be able

EDITORIAL INSIGHTS

#### Stop taking the blame

ow often have you heard someone say that IS professionals need to "think like businesspeople" to succeed?

It's a cliche. I know, because I helped make it one through my writings. But I never realized the insidious power of the statement until a couple of weeks ago when I participated in a roundtable discussion with some IS managers.

As is customary, a fellow journalist got things rolling by wondering aloud why so many CIOs fail. The journalist answered his own question by stating the obvious: CIOs just can't seem to get the hang of business. I watched as the heads began to nod around the table and as the technology professionals in the room assumed the mantle of guilt for failing to restructure their companies.

Somehow, they sadly acknowledged, IS types simply haven't been able to combine the wisdom of running a network with the

wisdom of running a business.



Nonsense. There are few businesspeople who understand where their companies and industries are going. Not many business unit heads can elucidate the challenges their departments, let alone their companies, need to address today.

That's why there are only a handful of exceptional companies. It's the unusual CEO that can transform a business. We lionize these champions of industry because they *are* so rare. Yet, the IS executive is expected to do the CEO's job and more — to develop keen insights into market forces and the company's critical success factors, and then build an information infrastructure that brings them to life.

Somehow business types have avoided the reverse of this situation. We're decades into the information revolution, yet rarely does anyone criticize business managers for failing to think about what technology can do for their companies. Why? How did they escape the same scrutiny?

Unless you are gifted with exceptional abilities, the best you can do is get other departments to crystallize the goals they're trying to achieve and help them meet those goals through technology. If you're doing that, you're a success. If not, you're ignoring a key aspect oof your job.

But from now on, let's skip the cliches and the guilt. Don't let them pin that business rap on you anymore.

John Gallant, editor in chief

jgallant@nww.com

#### **Teletoons**

By Phil Frank and Joe Troise guru@well.com



ON SECURITY

## Netscape Navigator flaw raises the question, Whom do you trust?

n September, Netscape Communications Corp. released the secure nonbeta version of its Netscape Navigator. Barely a fortnight had passed before a team of graduate students successfully hacked it.

This event raised several questions. To begin with, was the trust you placed in the company, and the trust you place in

so many other companies, misguided? How can you evaluate the security claims of vendors?

Doing business electronically on the Internet is touted by many as one of the medium's greatest advantages. But no one in his right mind feels comfortable passing unsecured credit card numbers from point to point on the Internet.

Netscape was supposed to have provided you with a secure way to do that. It promised Internet security and privacy by adding encryption to those transactions that required it.

When you buy a product, you expect it to perform as the manufacturer says it will. Astute corporate MIS departments put products through their paces to verify the advertising claims. But what company is truly tooled up to test the security of products? Security is an acknowledged key component of any corporate or commercial infrastructure. But what methods are in your tool kit to evaluate it?

Testing to prove the efficacy of security systems is an expensive, time-consuming exercise that requires a stable of in-house expertise. But how can you be sure that the manufacturer's security is as good as promised?

A vendor claims to use the Data

Encryption Standard, but was it implemented correctly? Or is there a programming error that makes it as easy to crack as Netscape's encryption? How do you know that the latest and greatest secure routers or Internet firewalls will actually hold up to a concentrated assault by hackers or technically sophisticated industrial spies?

What about the security token that guarantees only authorized users will be given access to your sensitive network secrets? How can you be sure?

The answers are not readily available, so you are left with a number of unenviable options.

You can test the security of each and every product you want to integrate into your environment. Fat chance.

You can call a few of your friendly hackers and ask them to put the product's security through its paces. How many management types are that forward-thinking and trusting? Narya one, I suspect.

You could wait a year or two and see how the product pioneers fare. Competitively and commercially, the downside is obvious, but peer review and proof of the pudding in a real-life setting is highly desirable. You run little risk this way, but the time factor is a killer.

You could buy only from those companies that openly put their products out there for the hackers and security geeks to test. Secure Computing Corp.



WinnSchwartau

How do know that

the latest and great-

est secure routers or

*Internet firewalls* 

will actually hold up

to a concentrated

assault by hackers

or technically

sophisticated indus-

trial spies?

and LeeMah Datacom Security Corp. have both made significant marketing inroads with this approach. It's not perfect, but it's an improvement.

The ultimate solution lies in the creation of an independent third party that can provide trustworthy evaluations of security products. Trying to convince the entire security industry to include crypto-

graphic implementation, user identification and authentication schemes, access control methods and the whole gamut of security tools introduced daily is a daunting task. It is best accomplished by a nonpolitical coalition composed of representatives from at least three, but ideally four, groups.

The first group that should take part in such a coalition are vendor companies from the private sector, led by an organization such as the National Computer Security Association (NCSA). The members will make sure that your needs remain the

focus. The NCSA can conduct evaluations in whatever depth will meet your needs, thus significantly shortening your in-house evaluation time.

The second member of the proposed coalition should be the government. It can draw from its vast resource of technical talent and should be willing to provide the expertise necessary to avoid reinventing the wheel. Government could shorten the cycle by 50% by making its technical expertise available to the needy private sector. Organizations with ties to the government, such as Sandia National Laboratories, are equipped to share experiences with the commercial sector.

The third member should be the academic community, which can provide the manpower for testing. Through university programs, stables of competent computer security experts could be trained and inexpensively employed to perform daily duties.

A fourth member would be ideal but politically difficult — representation from the European computer security community. This would prevent the efforts from being purely Yankee-centric.

In the meantime, though, deciding whom you can trust in the world of security products is a high-wire juggling act with no safety net. And until you can be absolutely, positively assured that the security you install will perform as claimed, you should:

- Test your security regularly. Be brutal: The bad guys don't play by the rules.
- Demand performance criteria and testing proof from your vendors; keep them as honest as you can.
- Don't put all of your information assets under a single security control; distribute them wisely and use multiple levels of security for the really sensitive data.

■Pray.

Schwartau is executive director of Inter.Pact, Inc. and the author of Information Warfare: Chaos on the Electronic Superhighway. He can be reached at (813) 393-6600 or via the Internet at winn@infowar.com.

EVENT MONITOR

#### Systems integration: Be prepared to stay late

ecent vendor announcements from Sun Microsystems, Inc. and Cabletron Systems, Inc. have generated great promise in the integrated systems and network management arena. In addition, this week's Enterprise Management Summit shoot-out in Dallas may give many of you hope that the issues involved in that arena will soon be solved. That may be false hope.

My own recent research into this issue has demonstrated that if you're planning on deploying enterprise management product suites, be prepared to spend lots of time on policy definition, product customization and integration implementation.

Sun's joint announcement with Computer Associates International, Inc. involved the integration of CA-Unicenter and SunNet Manager to let users perform systems and network management tasks from a single console. Cabletron did a one-up on Sun by announcing a wide range of agreements with a variety of vendors.

However, despite these impressive announce-

ments, Cabletron and its esteemed competitors have a fair way to go before they can truly claim to have successfully stormed the integrated management beach head. Why do I feel that way? Most of my perception comes from the work I have been doing with clients who are struggling with formulating an effective systems and network management strategy.

Many find that the problem areas in building a really effective management system are:

- Systems and network alert integration within a common troubleticket format. Many of you would prefer a format that includes organization and business-specific data because it would enable the help desk and backup technical support workers to prioritize problem management.
- Instrumentation of remote network probes to allow triggering of Simple Network Management Protocol alerts.
- Script generation for central-site network, application or database management tools such as BMC Software, Inc.'s Patrol for automated handling of various remote exception conditions. Many users would like this to include automatic dispatching to a centralized trouble-ticketing system.
- Backup and archival scripts that can be processed by central-site

tools for lights-out file archival operations at remote customer sites.

- Local database logical and physical definition for equipment asset and service entitlement databases.
- Interfaces from problem databases to tools based on Computer-Aided Software Engineering reasoning.
- Dispatch management from off-the-shelf trouble-ticketing sys-

tems to either vendors or local service organizations for parts fulfillment requests.

One objective these users are trying to achieve is reduced support costs for systems, network and LAN administration by developing centralized automated management in each of these areas. Completing the above tasks, however, will require a lot of expertise and much help in adapting the best industry practices to the objective of achieving the required cost reduction objectives.

In assessing this effort, I'm reminded of a quote from a former colleague during my product development days. As he put it, "You

spend 90% of your time developing a product, and then you spend the remaining 90% on network management."

The same perspective applies to these users. They have spent 90% of their time determining the best-in-class products and now will need to spend the remaining 90% delivering the necessary customization and integration.

Given this ever-growing trend, my advice to both Cabletron and Sun, as well as to other systems and network management vendors, is this: Products are necessary, but be sure you focus on the complete solution. Build up the people expertise and program libraries that can be used and reused by your customers to address the areas identified in this column.

Ask more from your vendors in helping you implement solutions in some or all of the areas I've identified. In addition, ask your vendors what they can do to help you coordinate multiproduct training for your staff. It's likely that at least 90% of your future job success will depend on a much more integrated approach.

Morency is a principal with The Registry, Inc., a nationwide provider of professional services for IS analysis, development and management. He can be reached via the Internet at jmorency@tri.com.



John Morency

#### **Impressed with Fusion**

I like your new Web site very much. I use it on a regular basis to track down vendors, products and information. Fusion is as much a part of my daily reading now as Network World. I commend your efforts to provide accurate, up-to-date information to those of us who need it.

Heather Benda Network systems technician Nebraska Public Power District Columbus

I wanted to drop you a note to say how impressed I am with the Network World

Fusion World-Wide Web site. What I really appreciate is the way related links are pulled together under a topic. For example, the story on Microsoft Corp.'s Internet announcements (News+, Local Networks) had several links related to the 'Net and some to Microsoft. To me, that adds value to merely replicating the pages of Network World. I hope you continue to provide more of this organized information. I will make this Web site my primary source for network-related topics.

Keep up the good work! Kim Berggren LANplanner First Bank System, Inc. St. Paul, Minn.

#### **Censorship's slippery slope**

I enjoyed Mark Gibbs' column on Prodigy (Oct 2, page 41). While I agree that Prodigy really isn't a publisher, it does act as imprimatur as far as what words it allows.

Gibbs compared Prodigy to a bookseller, but that's not what Prodigy is. Subscribing to an on-line service such as Prodigy is like

choosing a magazine and subscribing to it. You've accepted the magazine and all of its

Contrast Prodigy to other purveyors of information, such as Ma Bell or the Postal Service. They provide the pathway, but they don't care or control what is said or written — at least not yet. The on-line services are altering what they post just as a newspaper would edit profanity.

What irks me most is the government's futile efforts to legislate common sense. If Jimmy or his 97-year-old grandmother doesn't like reading or seeing things that are offensive, then they should not read postings bearing titles such as alt.sex. kinky.latex.

I also believe that unenforceable laws are unconstitutional. History has shown that outright banning of things never works. We should not start "down the slippery slope" by allowing other people to tell us which words to use.

Robert Schroeder Assistant communications officer Office of Emergency Management New Jersey State Police Trenton

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### **HEADSTE**

# Channel Sateways THREATEN FEPFUTU

By Charles Bruno and Anura Guruge

Newfangled LAN-to-SNA gateways can be an economical

FEP replacement or adjunct, but costs tell only half the story.

ave Nikolejsin is looking forward to the day when he can kiss his IBM 3745 front-end processors good-bye.

"The way our networks have grown, demand for the 3745s has gone way up," says Nikolejsin, manager of data networks, planning and engineering at BC Systems Corp. in Victoria, British Columbia. "These boxes are famous because they don't fail. But the big knock against them is that their software is just so damn expensive."

The day Nikolejsin can part with his 3745s may not be that far off, due in large measure to Cisco Systems, Inc.'s Channel Interface Processors (CIP). The CIP is a channel-attached SNA count that spans into Cisco routers, providing host

gateway board that snaps into Cisco routers, providing host access at a fraction of the cost of a FEP.

BC Systems, which provides data processing services to the British Columbia government, has already deployed the CIP, although it is still testing some of its advanced features. One of them is TCP/IP offload, which processes TCP/IP packets on the gateway, saving precious mainframe cycles. BC Systems is hoping to deploy SNA session processing on the gateway, too.

"If we can run SNA on the CIP, we can take the front-end processors out of the loop," Nikolejsin says. "That would be a huge gain."

Other users also are checking out other types of this new breed of channel-attached gateway. In some cases, the gateways save money by mitigating the need to expand the FEP base. In others, as LAN protocols dominate net traffic, channel-attached gateways can make it possible to oust 3745s altogether.

Depending on your network needs, you could haul in a good LAN-to-host gateway supporting IBM's Enterprise Systems Connection (ESCON) II channel for a little more than \$32,000. And if you only need a bus-and-tag channel connection, you might be looking at just a little more than \$19,000. By contrast, if you need a 3745, you could be shelling out as much as \$225,000.

In addition, ditching a 3745 could save you between \$5,000 and \$24,500 in costs stemming from the use of ACF/NCP, the FEP operating software.

That's the impetus driving Nikolejsin. "The hardware costs of the CIP arc

#### The price of mainframe access

Channel-attach gateway cost of ownership – including cost of chassis, channel and LAN interfaces, software and annual maintenance costs – as compared to IBM FEPs.

Gateway model	ESCON configuration	Bus-and-tag configuration
Bus-Tech 3172-BT-1	*	\$24,884
Bus-Tech 3172-NT-1	*	\$32,288
Bus-Tech Enterprise Network Controller	\$28,144	\$19,479
Cabletron Local Channel Attachment Module BT/ES	\$34,745	\$23,745
Cabletron Channel Interface Module 9S110-BT/ES	\$60,990	\$50,990
Cisco Channel Interface Processor	\$69,200	\$48,200
CNT Brixton Integrated Gateway 6600	\$68,932	\$64,932
IBM 3172 Model 003	\$34,252	\$23,512
IBM 3745 (midsize model)	\$225,010	\$198,880
IBM 3746 Model 950	\$96,832	*

<sup>\* =</sup> Not currently offered.

not all that far away from a low-end FEP; the real gain is not having to buy NCP anymore."

There's more, however, to choosing a channel-attached gateway than just weighing the cost of hardware and software. A cost-of-ownership analysis needs to balance economic factors against a series of technology issues. You may decide you need the more expensive FEP platform due to the number of devices you need to support, the need for a large number of serial ports or an overriding concern for the platform's reliability.

#### Serial killer

For a growing number of SNA customers, the need for scrial ports that traditionally handled Synchronous Data Link Control and Binary Synchronous Control (BSC) traffic is giving way to LANs handling multiprotocol data (see story, page 48).

Continued on page 48



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Solutions for a small planet

Continued from page 45

If you're in this emerging camp, there's an ever-expanding array of channel-attached gateways from which to choose. Besides Cisco's CIP, which works with its 7000 family of bridge/ routers, there's IBM's 3172 Interconnect Controller, Bus-Tech, Inc.'s 3172-BT-1 and 3172-NT-1, Cabletron Systems, Inc.'s modules for its MMAC and MMAC-Plus hubs, Computer Network Technology Corp.'s (CNT) Brixton Integrated Gateway 6600 and even IBM's new integrated Open Systems Adapter (OSA)/2 on its latest S/390 Parallel Enterprise Server mainframes.

Tale of two channels

Name: Bus and tag Announced: 1967

Max. transfer rate: 4.5M byte/sec

Lowdown: Bus and tag, IBM's original channel architecture, uses two bulky cables and separate plugs to transmit data in parallel.

Name: ESCON Announced: 1990

Max. transfer rate: 70M byte/sec

Lowdown: ESCON is based on fiber technology but is not FDDI-compatible. It moves data in a serial fashion, unlike bus-and-tag channels' parallel design. ESCON allows mainframe channels to extend over 30 miles.

Only 37XXs, Cisco routers and 3172s support serial ports. The Bus-Tech and CNT gateways also offer value-added functions such as NetWare for SAA support or tn3270 servers.

IBM's new 3746-950 Nways Controller and the Cisco ClP solution weigh in around the middle of the price scale at about \$95,000 and \$70,000, respectively, for comparable configurations. It should be noted, however, that Cisco provides a full range of multiprotocol routing services in addition to Data Link Switching (DLSw) and Advanced Peer-to-Peer Networking Network Node, while the 950, as yet, only supports APPN NN routing.

The 3745, 3172, Cisco CIP and OSA/2 all support SNA and APPN as well as TCP/IP between LANs and the mainframe. The 3746-950 will not support TCP/IP until next year.

The 3172 and CIP both offer an optional TCP/IP offload feature that reduces the mainframe's TCP/IP protocol processing load. The 3172 facility sets out to reduce mainframe cycles but does not claim to improve end-to-end

TCP/IP performance. Cisco's CIP does both.

"By putting the protocol processing on a CIP card, you can save 30% to 50% of the cycles the mainframe would have used," says Nick Francis, director of marketing for Cisco's Inter-Works business unit. Francis says that for every mainframe MIPS customers conserve, they generate \$50,000 in savings.

"If we can help customers to allow hosts to be more efficient, they won't worry as much about the cost of ownership of the channel feed," Francis says. A Cisco 7000 with a CIP and ESCON support will cost a little more than \$69,000, or in the middle of the price pack.

Cisco, however, is not the only company touting TCP/IP offload. CNT offers the feature on its CNT Brixton Integrated Gateway 6600.

"We're not doing a straight TCP/IP offload like Cisco," says Jim Morris, a marketing strategist with CNT. Instead, CNT is offering TCP/IP offload combined with a feature that pushes terminal session control functions out to the gateway.

On average, Morris says, users may save 12% of host CPU cycles by off-loading 1,000 tn3270 sessions to the gateway.

Put another way, off-loading

"The router vendor is just emulating SNA and is stuck with the limitations it imposes," says Marc Staimer, product marketing manager at CNT. "Session switching exceeds those limitations."



1,000 tn3270 users will save on average .007 CPU seconds per transaction.

Another plus for CNT is that it offers SNA session switching, which allows a physical unit to establish sessions with a mainframe anywhere in the net without having to continually pass data through the host that 'owns' the physical unit.

"The router vendor is just emulating SNA and is stuck with the limitations it imposes," says Marc Staimer, product marketing manager at CNT. "Session switching exceeds those limitations."

Session switching can be thought of as IBM's DLSw on steroids. DLSw terminates SNA sessions at Layer 2 and then encapsulates the traffic within TCP/IP. Session switching, by contrast, captures and terminates SNA sessions at Layer 5, the session layer itself. This allows the CNT Brixton Integrated Gateway 6600 to directly switch traffic between mainframes without FEP intervention.

the Bus-Tech gateways may not be ideally suited for traffic originating from native SNA devices.

#### No free lunches

Despite the cost and functional appeal of alternate gateways, there are certain inescapable penalties if you ditch the venerable 3745. For starters, the NetView Performance Monitor (NPM), widely used to garner SNA traffic usage statistics, currently is supported by the 3745 only; even the 3746-950 doesn't support the NPM. A version of the NPM to work with the 3172 is supposed to be in the works.

In addition, using a 3172 as an SNA/APPN gateway will increase the mainframe resources required to support each SNA session, in some cases by more than 10%. This mainframe hit will also apply to most gateways.

The other indubitable strength of the 3745 is its nowlegendary resilience and robustness. Most 3745 customers cannot recall the last time they had an unexpected failure.

#### LANs rule the SNA roost

he debut of channel-attached, routerbased gateways — and even IBM's own 3746-950 Nways Controller — signals a dramatic shift in the role an enterprise-class gateway is expected to perform.

With SNA-only networks, the primary role of the FEP was to support large numbers of serial ports for Synchronous Data Link Control, Binary Synchronous Communications (BSC) and some X.25 links at relatively low speeds — up to 19.2K bit/sec.

The fast-emerging and strategic role for this new class of gateway is to support a blend of SNA/Advanced Peer-to-Peer Networking and TCP/IP traffic. That places the emphasis on LAN connections rather than on serial ports.

There are four interrelated reasons why gateways can now concentrate on LAN connections: ■ Most new SNA devices are LAN-attached rather than being connected via SDLC links. And LANattached PCs, either running a full SNA stack or nsing an SNA gateway such as NetWare for SAA, are now the predominant SNA client. These PCs have virtually usurped the 3270 terminals that had been attached to 3X74 control units via SDLC or BSC links.

■ All bridge/ronters and frame relay access devices (FRAD) now support SDLC-to-Logical Link Control 2 conversion, which makes SDLCattached devices such as 3X74 controllers act as though they are LAN-attached. This conversion is nowincreasingly being done at remote sites, where the SDLC or BSC devices are resident.

Consequently, links terminate at the remote sites and no longer reach back to the enterprise

■ Multiprotocol internets that support SNA/ APPN are replacing the dreaded parallel net scenario — one for SNA-only traffic and the other for multiprotocol LAN traffic. At the central site, the routers, FRADs or other devices used to build these nets attach to the enterprise gateway via a LAN, again eliminating the need for multiple serial lines.

■ Most enterprises that have yet to converge their parallel networks are migrating their 9.6K or 19.2K bit/sec SDLC links to more cost-effective frame relay virtual circuits. With frame relay, a single serial port connected to a FEP can support 200 virtual circuits.

But this serial port attachment scheme for frame relay is rarely optimum and cost-effective. In order to support many 56K bit/sec virtual circuits, a 3745 has to be equipped with a \$26,000 1BM High Speed Scanner (HSS) that supports just one active port. A 16M-bit/sec token-ring adapter for the 3745 costs \$6,000 less.

Moreover, in most cases, installing the HSS for frame relay support still will not obviate the need for the 3745 to also have a token-ring attachment to support the LAN-attached devices at the local site. Rather than getting both, it would be much more cost-effective to just get the token-ring attachment and connect the frame relay net to this LAN via a \$2,000 to \$3,000 FRAD. Anura Guruge

Check out Network World Fusion to learn more about Cisco's Channel Interface Processor design and the type of applications for which the vendor believes it's suited. You'll also find a white paper from Hypercom detailing how PU concentration works. Link to http://www.nwfusion.com. From the main menu, select NetRef, Technology Resources and Network World

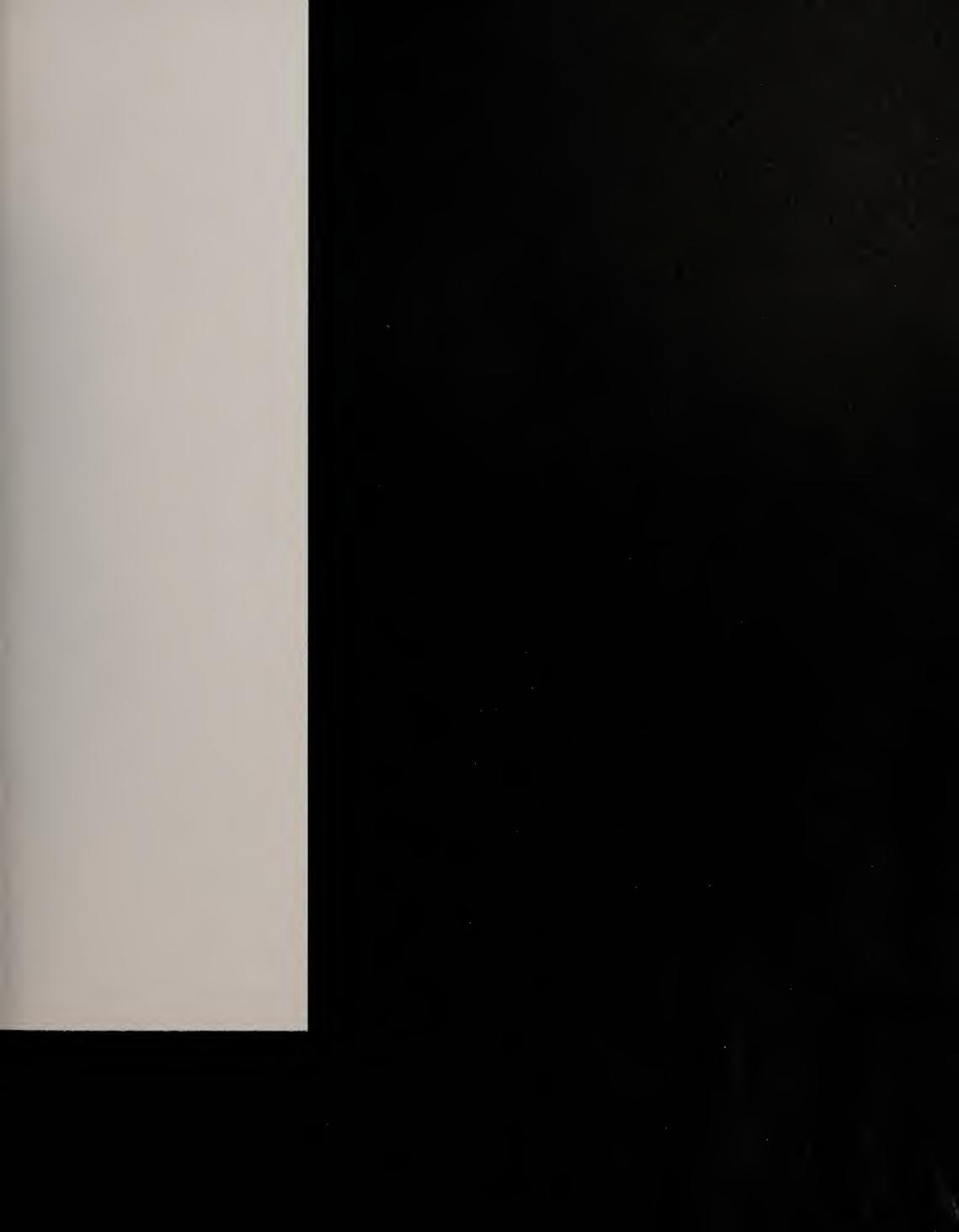
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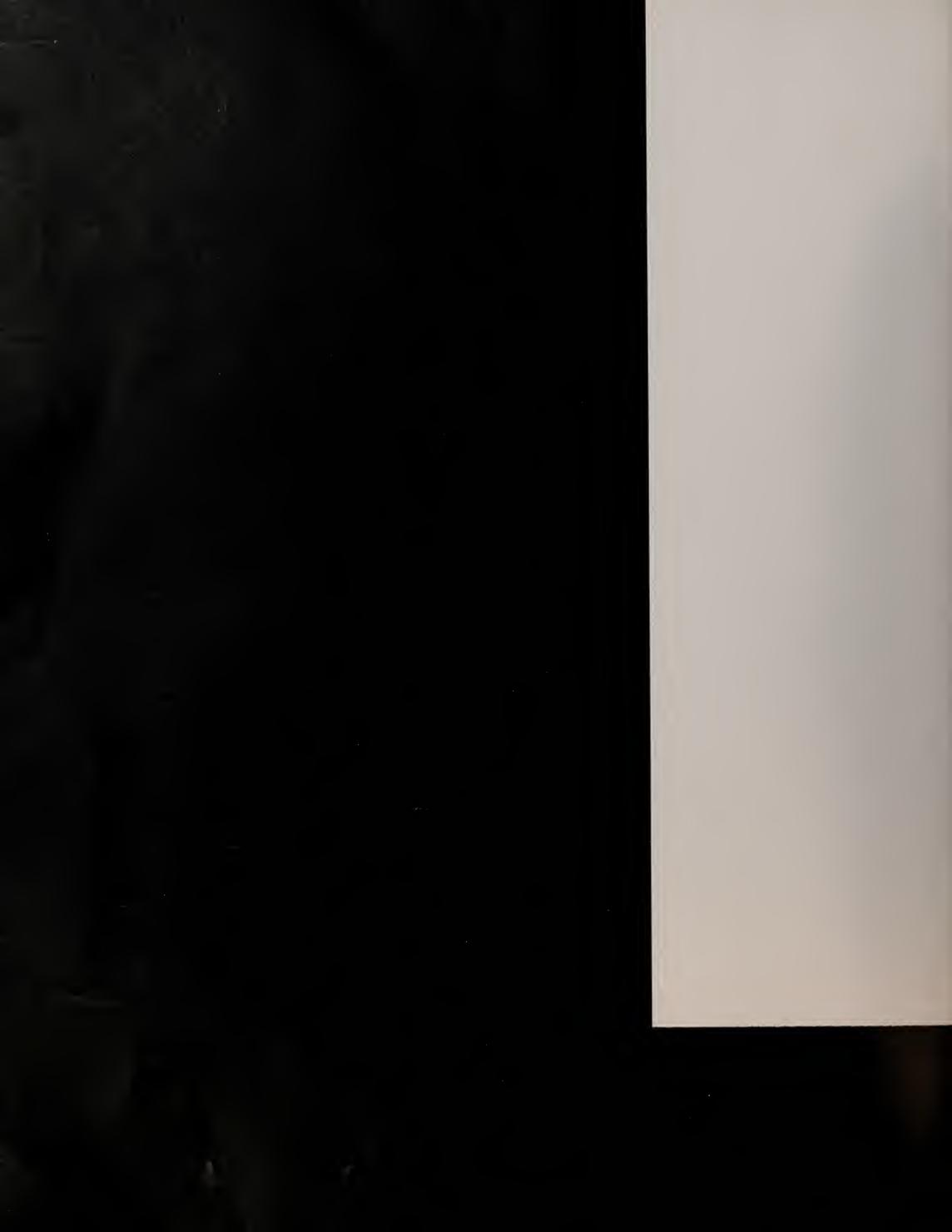
At the other end of the technology spectrum are gateways savings with a non-3745 gateway such as Bus-Tech's 3172-BT-I, 3172-NT-1 and Enterprise Network Controller. These aggressively priced devices are appealing if you already have gateway software on one or more PCs and are now looking for an integrated platform. If you depend on Novell, Inc.'s Net-Ware for SAA or Microsoft Corp.'s SNA Server, you should seriously consider the Bus-Tech products. Although, with their emphasis on LAN and IP traffic,

Even a \$200,000-per-year cost could in the end prove to be a very bad decision if it adds one hour of downtime.

This is an area where both the new 950 and the Cisco CIP have to prove themselves to be stable. The jury is still out on each since the 950 ships in December and the CIP has only been available for SNA traffic since September.

But at least one Cisco user believes the CIP is a reliable platform. Mel Lively, manager of network and telecommunications





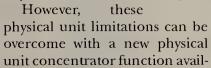
services at Presbyterian Healthcare Systems, Inc. in Dallas, says his company has deployed two Cisco 7000 routers, each with its own CIP.

"This product is made to run and run and run," he says. Lively noted a feature that enables one CIP to poll a sister device and if it determines the other gateway interface is failing, it can assume the identity of the troubled gateway and pick up all the stations. "I don't know any way to do that with a 3X74 and a NetWare for SAA gateway," Lively says.

Capacity and throughput are two more concerns when evaluonly 255 SNA PUs per LAN adapter. Thus, even with its full complement of four adapters, a 3172 has a downstream PU limit

of 1,020 — which would essentially limit it to relatively small SNA networks.

Cisco's CIP, though in essence emulating a 3172, has a downstream PU limit of 4,000, while a 3745 has a theoretical limit, when acting as a LAN- Francis says improved gateto-mainframe way, of 9,999.

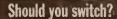


able on all Cisco bridge/routers,

Hypercom, Inc. frame relay access devices, IBM 2217s, IBM Communications Manager/2s and Novell's NetWare for SAA, to

> name just a few products. As the name implies, the physical unit concentrator gateway allows you to combine multiple physical units so that they appear as a single physical unit to IBM mainframes and enterprise gateways (see story, page 50). Performance,

efficiency can justify the cost of the channel feed. throughput, is the other factor when evaluating gateways. The throughput of most gateways is still determined by the speed of the channel protocols used to transfer data



#### Stick with the 3745 FEP if you:

- Have 500 or more serial lines to support now or in the future.
- Use SNA Interconnection for interoperability between autonomous SNA nets.
- Continue to depend on ACF/NCP functions such as network routing facility and network terminal option.
- ▶ Still have to support remote job entry-type BSC traffic using IBM's Basic Telecommunications Access Method (BTAM).

between the gateway and the mainframe. The protocol overhead can significantly reduce the actual data-transfer rate.

For example, a bus-and-tag parallel channel is rated at 4.5M byte/sec, which translates into 36M bit/sec. In reality, the best data-transfer rate possible across

such channels is around 3.5M byte/sec, or 28M bit/sec. A slightly higher markdown factor applies to ESCON II channels that are rated at 17M byte/sec. In most cases, gateways are lucky if they can exceed the true datatransfer rate of 13M byte/sec.

Conmtinued on page 50

#### **Bulking up the gateway**

ating alternate gateways, particularly since the 3172 can support

**Channel-attachment gateway product/price comparison** 

	Bus-Tech 3172-BT-1	Bus-Tech 3172-NT-1	Bus-Tech Enterprise Network Controller	Cabletron Local Channel Attachment Module BT/ES	Cabletron Channel Interface Module-9S110 BT/ES	Cisco Channel Interface Processor	CNT Brixton Integrated Gateway 6600	IBM 3745 (midsize model)	IBM 3746 Model 950	IBM 3172 Model 003
Basic chassis	\$11,730	\$17,720	\$11,635	\$4,750	\$15,000	\$19,000	\$36,000	\$151,950	\$51,400	\$9,970
Token-ring adapter	\$1,060	\$1,060	\$1,000	Included with channel interface	\$13,995	\$4,000	\$3,900	\$22,060	\$17,500	\$1,060
Bus-and-tag interface	\$5,250	\$5,250	Included in basic chassis	\$18,995	\$21,995	\$28,000	Included in basic chassis	\$15,370	NA	\$5,250
Min. hardware cost for bus- and-tag setup	\$18,040	\$24,030	\$12,635	\$23,745	\$50,990	\$42,000	\$39,900	\$189,380	NA	\$16,280
ESCON II interface	NA	NA	Planned	\$29,995	\$31,995	\$40,000	\$4,000	(1)	\$21,700	\$15,990
Min. hardware cost with ESCON II interface	NA	NA	\$21,300	\$34,745	\$60,990	\$63,000	\$43,900	\$215,510	\$90,600	\$27,020
Min. software cost	\$4,995	\$6,059	\$4,995	None	None	\$7,000 (2)	\$19,500	\$4,500 - \$24,800	None	\$6,060
Min. annual hardware maintenance	\$1,599	\$2,199	\$1,599	(3)	(3)	\$4,200	\$3,192	\$5,000	\$6,232	\$1,172
Min. annual software maintenance	\$250	\$1,000 (4)	\$250	(3)	(3)	NA	\$2,340	Included in monthly license	NA	NA
Max. no. of channel interfaces	2	2	2	6	12	8	2	8	10	2
Max. no. of LAN interfaces	4	4	6	6	12	16	4	8	20 (token ring)	4
ATM interface				<b>✓</b>	<b>✓</b>	155M bit/sec				100M bit/sec
FDDI interface	<b>V</b>	V	(5)	V	<b>V</b>		<u> </u>			V
IP support	V	V	<b>V</b>	V	V	Company of the Compan	<b>✓</b>	Value to the same		<b>V</b>
APPN support				<b>'</b>		Network Node		Composite node	Network Node	Passthrough
Frame relay support				<b>V</b>	<b>V</b>	<b>/</b>	<b>V</b>	<b>V</b>		<b>V</b>
Max. no. of downstream PUs supported	2,032	250	2,032	128	256	4,000	1,000 (6)	9,999+	9,999+	1,020 (7)
Value-added features	Built-in Novell NetWare for SAA gateway, TCP/IP Passthrough, tn3270 server	Built-in Microsoft SNA Server, optional TCP/IP Passthrough, tn3270 server	Built-in Novell NetWare for SAA gateway, Microsoft SNA Server, TCP/IP Passthrough,	NetWare for SAA, Microsoft SNA Server, tn3270 server	NetWare for SAA, Microsoft SNA Server, tn3270 server	TCP/IP offload, full-function multiprotocol router	TCP/IP offload, tn3270 Server, SNA session switching between mainframes	All ACF/NCP functions, including NPM		TCP/IP offload

#### Footnotes:

- (1) Requires 3746-900 Expansion Unit.
- (2) Includes \$5,000 charge for APPN Network Node code.
- (3) First-year support included in base price.
- (4) Also priced on a per-call basis.

(5) A \$1.295 option.

tn3270 server

- (6) 1,000 concurrent SNA sessions supported via Brixton's PU5/PU4 software.
- (7) Maximum downstream PUs supported with all four LAN adapters in use.
- NA = Not applicable

Continued from page 49

In practice, the 3172, Cisco's CIP and the 3172-BT-1 appear to be able to sustain a given channel's actual data-transfer rate. The issue becomes more complicated, however, if multiple channel interfaces are being used to transfer data across each gateway at full bore — with the possibility of a non-3745 becoming a bottleneck as the number of active channel interfaces increase beyond three or four.

If such multichannel configurations are to be used, the actual throughput of the gateway should be carefully established with the potential vendor.

#### Cost of ownership

Technical issues such as capacity and throughput may figure into the cost of channel gateway ownership, but the primary factor is outlays for the gateway's chassis, channel and LAN interfaces, software and maintenance. Other variables entering into the mix include Asynchronous Transfer Mode and FDDI capabilities, number of physical units supported and various value-added functions (see table, page 49).

The table, however, doesn't include every factor that goes into the true cost of owning a particular gateway. For example, the ACF/NCP software required by the 3745 is complex and requires consider-

able systems programmer support. It is not unusual for a company to budget \$80,000 yearly on systems programmers who split their time between ACF/NCP and VTAM. Eliminating a 3745 outright might not eliminate programmer costs, but it could cut them in half.

Continued on page 52

## Playing PU concentration

relatively new physical unit concentration function is enabling devices from vendors such as Cisco Systems, Inc. and Bus-Tech, Inc. to compete against larger IBM LAN-to-host gateways, generating huge savings for you in the process.

Physical unit (PU) concentration enables multiple PUs to appear to a mainframe as a single PU supporting multiple logical units (LU). This is possible because SNA permits PUs to support as many as 254 LUs, even though, in practice, most PUs support only a handful of logical units — often only one in the case of PCs.

With a PU concentrator function, 30 or 40 SNA PUs on a LAN can be presented to a mainframe as a single PU with multiple LUs. This is possible because SNA permits PUs of this type to have as many as 254 LUs.

In this scenario, VTAM running on the host does not see all 254 downstream PUs because the gateway is running a glorified spoofing facility that handles System Service Control Point (SSCP)-PU Session relay on behalf of VTAM. In effect, the gateway sees all the downstream PUs and controls them much as VTAM would. The gateway, in turn, shows VTAM only a single PU with related LUs.

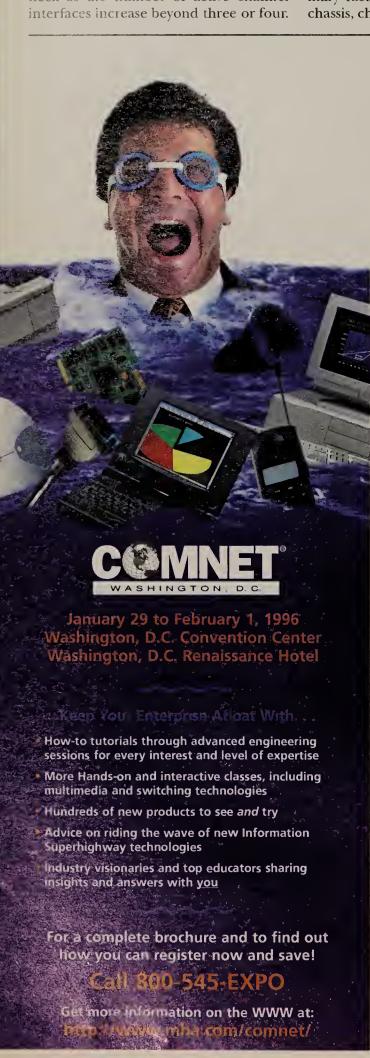
The feature can easily provide 40-to-1 concentration — in some cases even higher. That means an IBM 3172 Interconnect Controller could handle a network with 20,000 PUs — up from its previous limit of 1,020 — while a single Cisco Channel Interface Processor (CIP) can deal with nets of well over 100,000 PUs.

Additionally, PU concentration reduces the number of PUs that have to be defined and supported by the mainframe. It also dramatically reduces the number of mandatory and permanently active SSCP-PU control sessions that have to be supported across the WAN between the mainframe and remote PUs.

This in no way precludes mainframe resident NetView/390 from having full visibility and control of all actual PU sessions. PU concentrator gateways include a function referred to as SSCP-PU Session Relay.

Any network management alerts generated by a PU are forwarded by the gateway to the mainframe with a message identifying the PU.

Anura Guruge



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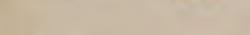
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COMPUTERWORLD

## The MSSING LINK

Brainstorm's OfficeLink for Lotus Notes gives Microsoft Office users the

 $same\ kind\ of\ integration\ with\ Notes\ that\ Lotus\ SmartSuite\ users\ enjoy.$ 

By Steven Goldberg



### **NetResults**

Product
OfficeLink for Lotus Notes

#### Vendor

Brainstorm Technologies, Inc. 64 Sidney St.
Cambridge, Mass. 02139
Phone: (617) 621-0800
Fax: (617) 621-8519
E-mail:
support@braintech.com,
72652.3576@compuserve.com
Notes Net:
Support%Brainstorm
Technologies@Notes Net

#### Price

\$1,995 per Notes server

#### Droc

- ▲ Extremely intuitive.
- ▲ Easy setup.
- ▲ Exploits all the benefits of Notes for Microsoft Office

#### Cons

- ▼ Poor documentation.
- ▼ Custom Notes database interface is difficult to work with.
- ▼ Sluggish performance.

f there is beauty in simplicity, then Office-Link for Lotus Notes is gorgeous. The software, which lets users save Microsoft Word and Excel documents directly into a Notes database, does not amount to rocket science, but it does offer you the ability to easily integrate the document management capabilities of Notes with the two most popular desktop applications.

Brainstorm Technologies, Inc. has eliminated the cumbersome task of manually attaching files to Notes databases. Instead of the old process of saving a file within Word or Excel, switching to Notes, composing a Notes form and attaching the external file to the form, users can store their documents easily with the help of an intuitive interface and share them with other Notes users. Combining the features of OfficeLink with the enterpriseready replication engine of Notes yields a natural synergy between the products.

In some instances, OfficeLink can be used as a replacement for the Notes interface. Users who spend the bulk of their time in Word and Excel in a workgroup environment may need to spend little time at the Notes desktop. For power users, OfficeLink provides a robust file management tool

Another benefit of the marriage between Microsoft Office and Notes is achieved by the mechanism Notes uses to store attachments. Notes, by default, automatically compresses file attachments. Until hierarchical storage management becomes a pervasive technology in network operating systems, the Office-

Link/Notes combination provides an easy way to save copious amounts of disk space.

The product is not a replacement, however, for Notes Mail. While users can save attachments to a mail database, OfficeLink doesn't provide the facility to read and replicate mail.

Conspicuously absent from OfficeLink is integration with Microsoft PowerPoint, the presentation software included in Microsoft Office. Microsoft has released APIs for Excel and Word only, but PowerPoint's API is due out imminently. Brainstorm intends to incorporate PowerPoint into OfficeLink as quickly as possible.

#### Installation

Installing and configuring Version 1.1 of the software was a breeze, despite the clumsily worded documentation. A Windows- and Notes-savvy user can be up and running in less than an hour. The OfficeLink software runs on any Windows 3.1, Windows for Workgroups, Windows NT and Windows 95 workstation. The software requires local copies of Word 6.0 and Excel 5.0 on the client PC, along with at least 8M bytes of RAM, with 16M bytes recommended.

The integration of OfficeLink into a production client/server environment requires little effort, as it requires no modifications of the Notes or net infrastructure. OfficeLink will work with any supported Notes 3.X server platform, including Windows 3.X, Windows for Workgroups 3.11, OS/2, Unix, NetWare and Windows NT. Notes supports all the major net protocols, including IPX/SPX, TCP/IP, DECnet and NETBIOS.

The installation process cop-

#### SAVING DOCUMENTS IN AN OFFICELINK NOTES DATABASE

Figure 1

The fields in the OfficeLink Summary dialogue box are similar to those found in a Microsoft Office summary box.



ies the OfficeLink software to its own directory and updates the Word and Excel applications to add a menu choice to both the Word and Excel menu bars. Between the familiar File and Edit choices on the menu bar, "Notes" now appears. Under Notes, a user can perform Save to Notes, Save As to Notes, and Open from Notes commands.

After installation, starting up Word and Excel takes slightly longer, as OfficeLink establishes a connection with Notes. The dialogue between OfficeLink and Notes occurs indirectly via the Notes API, a C programming interface available from Lotus for developers.

This indirect dialogue between Notes and OfficeLink is accomplished via Brainstorm's NotesLink, a high-level API for communication between Notes and OfficeLink. Brainstorm has several other products, including Delphi/Link, VB/Link for Visual Basic and DataLink, which use the NotesLink interface. Brainstorm has licensed NotesLink to other vendors, including Gupta Corp., Mathsoft, Inc. and Borland International, to provide hooks from their products into Notes.

The installation process also copies a Notes template file and database file to a user's local

Notes directory. While Office-Link enables Word and Excel to access any Notes database, this template is geared at getting you off to a quick start.

A separate installation process copies the OfficeLink Notes database and template to the server, although this can be done as easily with a copy command.

To get a feel for the system, we first used the database included with OfficeLink. Accessing the database with the Open from Notes menu selection presents

Continued on page 52



The Network World Test Alliance plans to review fast Ethernet hubs in an upcoming issue. Readers and vendors with suggestions for hubs to test should contact Test/Reviews Editor Lee Schlesinger at Ischlesi@nww.com.

#### SAVING DOCUMENTS IN A CUSTOM DATABASE

Figure 2



The OfficeLink forms selection dialogue box displays all available Notes forms that users can choose to save documents in a custom Notes database.

#### Review

Continued from page 51

you with the OfficeLink interface. The interface is full of useful information that is presented clearly. Users can sort documents by their corresponding Notes views via a pull-down box. This powerful feature gives Notes developers the ability to present stored documents in any number of ways.

Selecting an available view from the OfficeLink interface presents the stored documents in a small, scrollable window. The window uses the familiar file and folder icons to present a hierarchy of documents in the Notes database. The document window displays all the fields defined in a Notes view.

The OfficeLink interface also contains a window that displays a list of files attached to the selected Notes document. The Notes database that ships with OfficeLink allows one file attachment per Notes document, but OfficeLink lets you attach multiple Word and Excel files per Notes document with a userdefined Notes database.

A handy feature in the Office-Link interface is the ability to view file attachments. This feature has the potential of being a legitimate time-saver, even

#### HOW WE DID IT

Our test client was a 486/50 AT&T Globalyst 200 laptop with 12M bytes of RAM, running Word 6.0, Excel 5.0 and the Notes 3.3 client. It was connected via 10Base2 Ethernet to a 60-MHz Dell Pentium server running Windows NT 3.51 and the Notes 3.3 server for NT. Both client and server were running TCP/IP.

We attached to both local and network-based Notes databases. We saved and opened both Word and Excel files, in both OfficeLink and non-OfficeLink Notes databases.

though the viewer can only read Exceland Word formats.

Also included in the interface is the ability to delete a document. Deletion is regulated by Notes' access control features; without the proper privileges, a user cannot delete a document.

Saving a document to an OfficeLink database via the software's interface is also a straightforward process. Choosing Save or Save As presents the user with

OfficeLink Summary Info OK **Current Field Value:** Field Type Field Name 1 Arlene Correa NAMES\_LIST SendTo NAMES\_LIST CopyTo NAMES LIST BlindCoorTo NAMES TEXT

Figure 3: Once you choose the form for a custom Notes database, you must entervalues in  $a\,more\,complex\,manner\,than\,the\,corresponding\,box\,for\,an\,Office Link\,Notes\,database.$ 

a Notes database selection dialogue box that closely mimics the native application's.

OfficeLink's Save and Save As interfaces closely resembles the Open dialogue, with separate windows displaying a document hierarchy and attached files (see Figure 1, page 51). Clicking on the Save button pops up a summary information dialogue box, similar to the one used by Word or Excel. When using an Office-Link Notes database, the summary information is written directly to corresponding fields in a Notes form.

The OfficeLink summary dialogue box is, however, somewhat limited. Keywords, which are used extensively in Notes databases, are entered as free-form text. This implementation opens the door for misspellings or ambiguously defined keywords, such as "OfficeLink" vs. "Office Link." The software should present a list of available keywords, either predefined or userdefinable, as Notes does.

#### Tailor-made

For databases other than the template database that ships with the product, the OfficeLink interface presents custom Notes forms and fields in a slightly awk-

While the OfficeLink interface presents the user with a dialogue box that resembles the Word or Excel summary information dialogue box, all bets are off while using a custom dialogue box.

Performing database writes is a three-step process that we found somewhat confusing. First, the standard OfficeLink dialogue is displayed after selecting the Save to Notes action from the File menu. This displays the standard OfficeLink dialogue, where the user must next press the Save button.

The Save button pops up the Notes form selection dialogue. Forms are used to enter information in a Notes database. There can be many forms in a given database, each with multiple names. The OfficeLink interface

**NetworkWorld** 

displays all available forms in a poorly designed interface (see Figure 2). This process should be incorporated into the standard OfficeLink dialogue that renders Notes forms with Office applications.

Once selected, the appropriate fields for the Notes form are displayed. Notes forms can use any combination of fields available to the database. Entering information in the Notes fields throughout the OfficeLink interface is a bit confusing, suffering from the same awkwardness as the form selection box (see Figure 3). Users must first select a field, then enter information in a standard text box. The whole process should be redesigned to imitate a Notes form.

#### On the horizon

Overall, OfficeLink has engineered a clear winner for many organizations that rely on both Notes and Microsoft Office. The product installs easily and provides clear benefits for many users. For those who question the Notes utility, seeing it as a solution in search of a problem, OfficeLink could be the answer.

For many organizations, offthe-shelf document manage-

ment systems can be overkill and confusing. While Notes does not have all the capabilities of fullfledged document management systems, it incorporates many of their features. Couple these features with Notes replication technology, and you have a costeffective enterprisewide docu-

Read up on other Notes-based application-

and Buyer's Guides.

development and integration technologies. Point

your Web browser at http://www.nwfusion.com. From the main menu, select NetRef, then Reviews

> ment management solution. Version 2.0 of OfficeLink, tentatively due out by year-end, is set to address the product's current shortcomings. Brainstorm promises improved performance, a better user interface and the ability to render Notes forms.

The alliance is a cooperative of users, consultants, educators and integrators that applies its technical and business

skills to analyze and compare

strategic network products. A list of alliance partners can be found on page 43. Goldberg is the manager of desktop

services for a major accounting firm, where he focuses on implementing workflow automation technologies. He can be reached via E-mail at sgoldberg@vax.clarku.edu.

#### Feature

Continued from page 49

The personnel costs required to maintain other gateways — in particular, the 3172 — are considerably less, and even negligible, compared to the 3745 and its ACF/NCP. However, any applesto-apples comparison goes out the window if you factor in a channel-attached router as a gateway. That's because the router network has considerable maintenance costs of its own on top of the support required for the gateway.

The bottom line here is that gateway cost-of-ownership calculations involve hard-to-quantify elements. It's important that you be cognizant of these hidden elements — with the lost revenue opportunity cost being paramount.

#### Pick of the litter

There are a few rules of thumb that may make the channel gateway direction you should pursue clearer. For customers that have decided to standardize on multiprotocol routers, IBM's

3172, Bus-Tech's Enterprise Network Controller, Cabletron's Channel Attachment Module and Channel Interface Module, and Cisco's CIP are likely the most cost-effective solutions.

The 3172 essentially provides a nonpartisan solution that is not specific to a given hub or router vendor. In terms of cost of ownership, the Cabletron offerings are probably a better option than the 3172 because the hubs provide functionality that goes well beyond the IBM controller, such as the ability to handle multiprotocol routing.

You should note, though, that the Bus-Tech and Cabletron gateways do not support true 3172 emulation, whereas the Cisco CIP does. That's important because true 3172 emulation gives you support for at least 1,000 PUs, while the Cabletron device, for instance, only supports 250 PUs - although physical unit concentration features can boost both numbers.

If your environment uses multiple mainframes — more than six for the economics to pay off

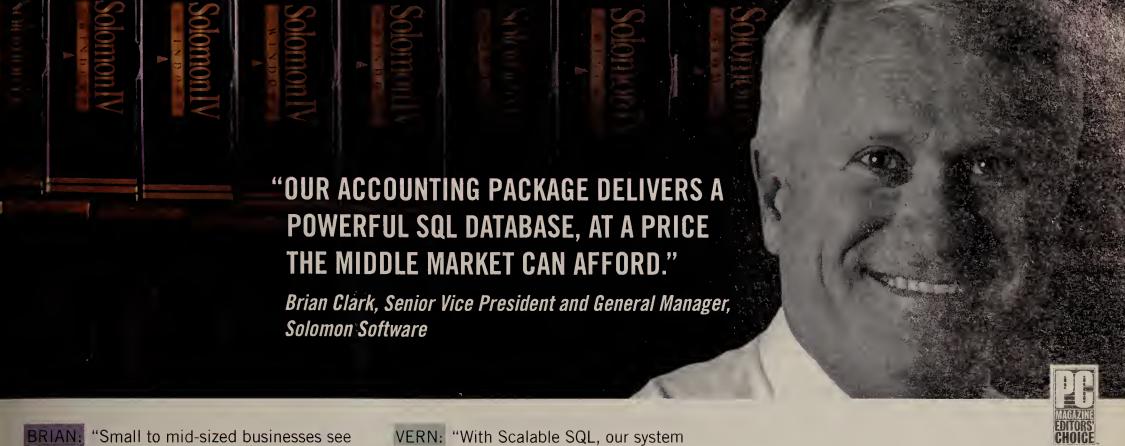
— then the CNT Brixton Integrated Gateway 6600 is likely the way to go. The 6600 offers direct SNA session switching, which makes it ideally suited for large mainframe environments.

And customers with large SNA networks that use SNA Interconnection may have no choice but to use a 3745 or even a 3746, if for no other reason but to ensure uptime based on the device's impeccable reliability record.

Be careful not to look solely at the financial aspects of channel gateway cost of ownership. And remember that this market is getting more competitive every day.

Lastly, BC Systems' Nikolejsin says you should test any gateway before you turn it loose into production. "We've beta-tested the CIP for almost a year now and have yet to have a failure," he says. "That's got to make you feel prettygood.'

Guruge is a New Ipswich, N.H.based independent consultant specializing in SNA and internetworking. He may be reached via Email at aguruge@mcimail.com.



their accounting systems as critical. Our customers focus on accounting, not database administration. They need accounting software that's easy to use, maintenance free and has the full power of a relational database."

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Vern Strong, Vice President of Systems Development, Solomon Software

## Management Strategies

**Covering:** Career Insights and Innovations in Managing Staff, Budgets and Technology

#### Briefs

#### **BIS Strategic Decisions**

has published its "Guide to Workflow Software: A Visual Comparison of Today's Leading Products."

The comparison report
evaluates the strengths and
weaknesses of 10 workflow
products by comparing their
workflow map and run-time user
interfaces, in addition to their
forms and document handling
methods. The report also examines product architectures, platform support, development tools
and routing rules.

Products from the following companies are covered in the guide, which is priced at \$350:

- Action Technologies
- ► AT&T Global Information Solutions
- ▶ FileNet
- ► IBM
- ► Recognition International
- Sigma
- Staffware
- ▶ VlewStar
- ▶ Wang
- Xerox's XSoft Division

BIS Strategic Decisions: (617) 982-9500.

expanded channel support program, called PartnerNet, for its North American resellers, regional consultants and authorized service centers.

The program increases certification requirements for becoming Platinum, Gold and Authorized partners.

The requirements include specifications for the minimum number of engineering employees the reseller must have on staff, along with their credentials, demonstration capabilities, product or service revenue, support-lab configurations and customer support hot lines.

Novell has established a recertification grace period, which ends March (1996, to allow its partners to comply with the new requirements.

Novell: (801) 429-7000.

### The push and pull of getting project approval

A large dose of good salesmanship increases your odds of getting the go-ahead on business process redesign projects.

#### By Steve Weissman

Convincing the head honchos in your organization that networking types can become the heroes of a business process redesign initiative is like pushing rope—it works best when you've got people on the other end pulling up the slack.

The trick to finding your rope pullers is in building consensus at the ground level and working your way up, a strategy that requires as much psychology as technology, not to mention a bit of salesmanship.

The first thing you should do is tailor your message about the benefits of the redesign project to address the concerns and potential objections of the different people who may get involved along the way.

"Accounting types care most about the bottom line and want to know the business impact of implementing a new system," says Pam Paul, assistant vice president for technical services at Cigna International in Philadelphia. When pitching a redesign project to company accountants, Paul had to explain how it set up Cigna to gain new business, improve customer service and reduce travel costs.

"Managers in other countries, on the other hand, were thrilled to learn that they could be better connected to their colleagues in the U.S. and elsewhere," Paul says. So her message to those managers extolled the benefits of collaborative computing, a concept new to the insurance giant.

But sometimes even the most airtight business arguments are not enough to tip the balance in your favor.

"Everybody has a hook," says Eric Goldreich, director of IS at the Los Angeles-based law firm Sheppard, Mullin, Richter & Hampton. "When we first got computerized six years ago, the hook was [Intuit Corp.'s] Quicken, which we gave to everybody who agreed to put a PC on their desk. Later, when we installed electronic mail, the hook was the ability to message people."

The hard part, of course, is

identifying each person's hook and then investing the time it takes to win them over. "A lot of it was me going around and cajoling people," Goldreich says.

#### Where cash and culture meet

Ultimately, any project has to be justified in hard-dollar savings, a challenge that can be eased or complicated by the corporate culture.

#### TIPS FOR GETTING A PROJECT GREEN LIGHT

- Build a consensus among all groups involved.
- Put on your salesman hat and tailor presentations to each group.
- Point out the specific benefits the project will yield for each group.
- Try to parlay any support you get from senior management.

"The insurance industry tends to be rather conservative," Cigna's Paul says. "So anything that carries a price tag of \$500,000 to \$1 million elicits a lot of glares and stares."

However, Paul had two big advantages: The company president's mission statement explicitly called for "borderless communication," and the firm was already operating in teams organized by lines of business around the world.

That top-level support was invaluable, Paul says, because it sent a message that bolstered her credibility.

The team orientation got people used to thinking beyond their own offices and prepared them to consider what could be accomplished when the technical tools were in place.

Like Paul, Goldreich enjoyed support from top managers, but he had to start pretty much from scratch. "Moving the legal secretaries from typewriters to PCs for word processing was easy because the productivity gains were obvious," he says. "But convincing the attorneys to computerize was much harder."

The real clincher, though, was the law firm's decision to deliver its weekly cash report via E-mail to complement its paper report. "Attorneys always want to know what their week's take is," Goldreich says. "Now they can figure it out 5 minutes after the cash report is posted — but only if they are on the network."

Ultimately, how far you go with your redesign projects — and how battered you get along the way — depends on how effectively you can convince other

people that the project is good for them.

Weissman is president of Kinetic Information, a Waltham, Mass., consultancy specializing in business process redesign, workflow, electronic forms and collaborative computing. He can be reached via the Internet at 76143.3463@compuserve.com or by phone at (617) 893-4690.

#### MANAGEMENT DATA ON-LINE

Network World peruses on-line services for interesting hints or tools that will make your job easier. Here are a few:

#### **Project mgmt. standards**

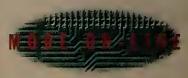
Network managers looking to hone their project management skills can stop by the Project Management Forum's Web site and download a listing of various standards and certification documents. The documents cover a number of project management standards, such as those governing software development efforts, quality assurance and project performance assessment. Also, there is information about how to gain certification as a professional project manager.

#### Frame relay mgmt. services

Over on CompuServe, the User Experiences library in the Frame Relay Forum includes a document from Insight Research Corp. that examines how a number of carriers are offering or plan-

ning to offer frame relay network management services. The services enable users to access a carrier's network management system and perform a limited set of functions, such as measuring circuit performance, traffic usage, troublereport status and current configuration.

Prepared in August, the document examines the management service strategies of AT&T, CompuServe, Inc., Cable & Wireless, Inc., GTE Telephone Operations, Intermedia Communications of Florida, Inc., LCI International, Inc., LDDS WorldCom, MCI Communications Corp., MFS Datanet, Inc., Sprint Corp. and US WEST, Inc.



Visit http://www.nwfusion.com
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also find links to Web sites
mentioned in previous

"Management Data
On-line" columns.

Network World

TUSION

#### **OLAP** explained

If you're evaluating on-line analytical processing (OLAP) products, there is a helpful document in the Data warehousing/OLAP library in CompuServe's Information Management Forum. Written by E.F. Codd & Associates, the document describes the OLAP architecture that makes it possible to search and analyze data stored in operational and historical databases.

User Support Analyst Supervisor workers who provide communication & networking solutions & support to computer users; Planning & implementation of customizing company communication systems, incl. instal lation of all in house wiring & end to end line conn. based on microwave or fiber optic or twisted pair equip ment; Integrating telephonic & computer apps. & equipment; Planning & implementing to extend already established comm. system & inte-grate with new; Establishment of hasic comm. paths; Planning & implementing computer room work space: selection & installation of implementing of temperature control; Configures E-mail messaging net-working capabilities for E-mail messaging; Installs & configures local area networks (LAN); Designs, plans & configures computer network VAX VMS & NOVELL; Computer netw. installation joh costing & hidding; Designs & implements computer disaster recovery & security systems Must have specific knowledge of:
VAX Computer system, incl. VMS
Oper.Sys., vers. 5.2, VAX Peripherals,
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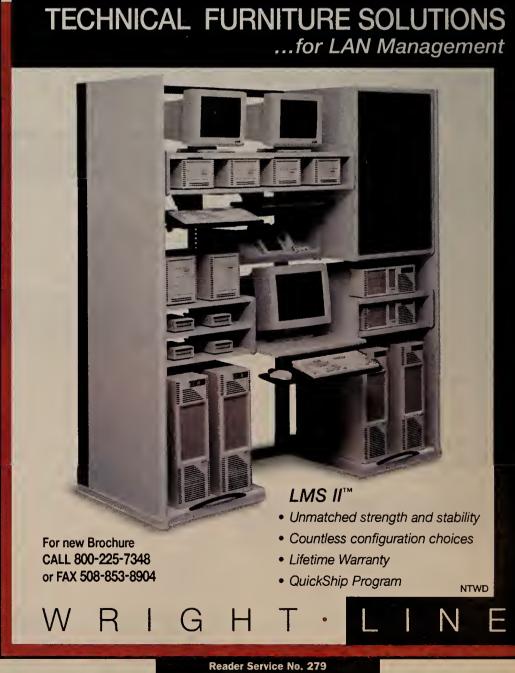
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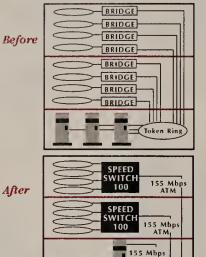
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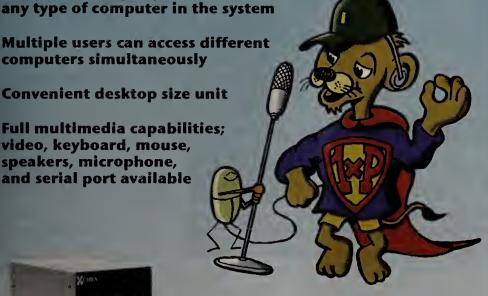
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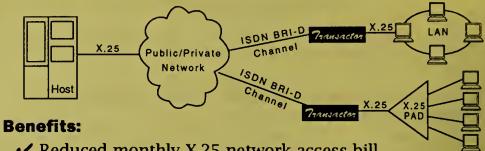
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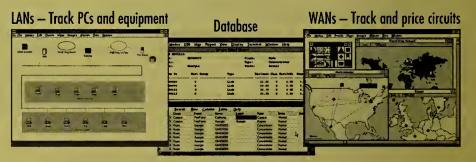
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### Novell

#### Continued from page 1

bility problem they have to deal with," he said. "When they say they're going to do something, the question goes beyond whether they're going to be late. We're asking whether they're going to do it or not. We don't know."

While many users are more enthusiastic than Sun, others are taking a wait-and-see attitude toward Novell, which is trying to shed the image and strategies of once-revered Ray Noorda in favor of the process-management approach of new Chief Executive Officer Robert Frankenberg.

The question is still whether or not Novell can convince its huge customer base that its most recent vision of the future has merit and that the company can fulfill that vision.

Strategic buying decisions, after all, are based largely on trust — especially those concerning network operating system (NOS) platforms. Users making these decisions have to believe in their vendors and buy into their long-term visions.

These are not the kind of decisions users want to have to reverse two to three years down the road.

For years, Novell presented itself as a NOS and applications server company that competed with Microsoft Corp. on every front. Thereafter, management changed and the firm began to shed many of the products it had been pushing, including, most recently, UnixWare.

Novell will no longer sell application servers; instead it will sell network services and integrate all operating systems into NetWare, the companysaid.

But Sun said this vision for the

### NOVELL'S VISION TO SUPPORT HETEROGENEOUS NETS

- Shed UnixWare and license NetWare to Unix vendors.
- Build requestors on Windows NT and Unix, tying them into NetWare's directory and other services
- Add SMP, clustering and memory protection to make NetWare a better application server.
- Build three new versions of NetWare that support Internet, commerce, object and transaction services.
- Build a global public IPX net with AT&T and other carriers.
- Build services into the public net that link smart devices and home users.

future, crafted by Frankenberg and his handpicked management team, is not enough. Novell has to prove itself, he said.

Under Noorda, Novell was constantly launching into new product areas and making grandiose promises that it failed to fulfill, Sun said.

Two years ago, for example, AppWare was the hot ticket, and Foundation — a layer of code that let users run one application on multiple operating systems — was the keyselling point.

"Now it's gone," Sun said. AppWare is still on the product

(From top) Users
John Smart, Art
Mafale and
Moses Sun
ponder whether
Novell's new
strategy will
work well for
their companies.

menu, but Foundation was killed off last year and AppWare became irrelevant, Sun said.

"And Unix-Ware — same

thing," he said of the Unix System Laboratories, Inc. technology Novell bought from AT&T in 1992 and touted unsuccessfully before handing it off to The Santa Cruz Operation, Inc. (SCO) last month.

"If you had committed to UnixWare, you're dead," Sun said. SCO plans to incorporate UnixWare into its own Unix products but will still favor its own technology, he said.

"SCO is not going to sell UnixWare — you can bet on it," Sun added.

Microsoft, which pushed its Windows desktop operating system for seven years before it became a hit, is more consistent in its plans and almost always delivers on its promises, even if delivery is late, Sun said. "Late is fine; people accept that. Microsoft delivers."

Sun will keep his 20 or so Net-Ware servers and add to the smattering of Unix and NT servers in his net depending on need. He leans toward NT for its power and the variety of NT products available, however.

"I'm a CNE and a CNI — of course I want Novell to do well," Sun said. "I'll have a job until I retire if they're still around, but I wouldn't hold my breath on it."

### I'm from Missouri, well, Connecticut: Show me

Although it took some convincing, Art Mafale is a cautious believer in the latest version of NetWare, if not in Novell's latest corporate vision.

Mafale, network architect for the investment systems division of ITT Hartford Insurance Companies, is willing to listen to Novell's new pitch, but he won't jump on the bandwagon until the vendor's technology is proven stable.

Mafale said the new services Novell is planning look good. But most of them will ship as .0 products, which you won't find in Mafale's net.

"The joke when NetWare 4.0 shipped was that it was 4-dot-uhoh," Mafale said.

But six months of testing convinced Mafale that 4.1 is stable, and the NOS is currently saving him the salaries of three LAN administrators he would have

had to hire if he had not upgraded from NetWare 3.12.

Getting rid of UnixWare and focusing on NOS integration via NetWare will enable Novell to concentrate

on what it's good at, Mafale said. "I'm looking forward to [the new product line]," he said. "It's new, it's refreshing, it's another challenge."

### You don't get to walk on the moon, but you can still drink Tang

All the highfalutin rhetoric can get a bit thick sometimes, and no vendor has ever delivered on all the components of a marketing-based vision.

But even if Novell does not succeed in tying mainframes and toasters and cars and telephone systems into one huge Smart Global Network, the technology developed in the effort will make nets run more smoothly, said John Smart, PC LAN manager at retail clothing chain The Limited, Inc. in Columbus, Ohio.

"A good analogy is the space program in the '70s and '80s," Smart said. "The average American didn't benefit from someone else walking on the moon; we weren't there to see the sights. But the spin-off technology has touched nearly everyone on the planet."

### **FCC**

#### Continued from page 1

George David, publisher at the Center for Communications Management Information (CCMI), a tariff analysis firm in Rockville, Md., said the carriers will probably come in with higher frame relay prices since whatever they do is legally binding. "Because tariffs lock in carriers to a greater degree, there will be incentive to push those prices up a bit," he said.

But large users could work the tariffs to their advantage if they shift negotiating tactics, said Hank Levine, a partner in the law firm of Levine, Blaszak, Block & Boothby. Previously, most frame relay contracts have been based on an individual network design, frequently bundled with selected vendors' customer premises equipment (CPE).

Since frame relay will be a tariffed service, users for the first time will have the opportunity to incorporate the service into AT&T's contract tariffs or equivalent special deals from MCI Communications Corp., Sprint Corp. and WorldCom, Inc., Levine noted.

Contract tariffs typically refer to a standard tariff price and then provide a significant discount if the user meets certain usage targets. "It could be a big advantage to the large user," Levine said.

If Novell hits no other milestones on its road map, expanding its directory and embedded systems technology to be capable of tying other operating systems and intelligent devices into a single global net, it is worth listening to the rest of the strategy.

"If you have NetWare as your common denominator, you could someday have a [NetWare Embedded Systems Technology] agent running in your point-of-sale system and your warehouse automation system as a front end to your office automation [system] and in your Email system," Smart said. "It brings the potential to let these systems talk more easily to each other."

Without the UnixWare millstone around its neck, Novell can move more quickly to become the common integration point, which is its main strength and the main reason users turn to the company, Smartsaid.

And NetWare Connect Services, the public net Novell is building with AT&T and other carriers, will be a huge benefit to midsize users that can't afford to build a global WAN, he said. ■

CCMI's David agreed. Those prices will be low enough to encourage users to migrate from private lines to frame relay but high enough to give the carriers leverage to lock users into long-term contracts for frame relay service at whatever price they are paying now, he said.

It was still unclear last week how the ruling would apply to the many users that already have both contract tariffs for switched and private-line services and a separate negotiated agreement for frame relay.

Also, with the exception of MCI, most carriers' frame relay prices are not based on usage, which could make it difficult to devise discount plans that clearly cover switched, dedicated and packet data services all in one.

#### Regulatory straightjacket

Paradoxically, the lean, lowoverhead nature of frame relay transmissions, as compared to older packet data transmission protocols such as X.25, was what forced the commission to impose the new regulatory straightjacket.

The FCC noted that carrier services escape the tariff requirement only if they manipulate the data within the network to create an enhanced or value-added service, such as that provided by CompuServe, Inc.

Accepting an argument made by the Independent Data Communications Manufacturers Association (IDCMA), the FCC ruled that carrier manipulation within frame relay — such as discarding data in case of congestion — is merely an inherent function of frame relay, instead of a value-added service.

The IDCMA had petitioned the FCC to force frame relay to be tariffed because tariffed services generally cannot be bundled with a specific vendor's piece of CPE. Several IDCMA members were concerned that AT&T, in particular, steered users to large CPE makers such as Cisco Systems, Inc.

Yet the ruling was only a partial victory for the IDCMA on this point. The FCC said AT&T and other carriers would be free to continue "packaging" certain equipment with frame relay service so long as the basic service was provided under a tariff.

But AT&T will not be able to bundle the services into a single contract unless it provides a true protocol conversion service.

### COMMENTS?

See "How to reach us" on page 5.

### Managers

Continued from page 1

Novell will unwrap a new version of its ManageWise product that is tied more tightly to enterprise managers and adds security features.

Analysts said the products will pit Digital and Novell squarely against each other. Both companies' offerings perform similar functions, although they differ in some key areas, such as software distribution and integration with leading LAN managers such as Microsoft Corp.'s Systems Management Server.

Digital's ClientWorks and ServerWorks rum on servers and workstations in Digital Pathworks, IBM LAN Server, Microsoft LAN Manager and Novell NetWare networks. They work with Digital's Manage-Works product, which allows operators to control file and print services and net devices in those four LAN environments.

The packages support Simple Network Management Protocol and the Desktop Management Interface (DMI) standards. SNMP allows users to monitor the status of network connections, while DMI support allows operators to collect information about CPU and memory utilization, disk capacity and software inventory.

But users will not be able to distribute software to ClientWorks and ServerWorks systems because software distribution will not be available for some time.

The new Digital software will go up against Compaq Computer Corp.'s Insight Manager and Intelligent Manageability packages, IBM's NetFinity and Novell's new ManageWise 2.0, which will also debut this week.

But analysts said Digital's offering is more comprehensive since it links to the firm's AssetWorks asset manager and Polycenter Manager on NetView, Microsoft's Systems Management Server, Hewlett-Packard Co.'s OpenView and SunSoft, Inc.'s SunNet Manager. "I put [Digital] ahead of the pack in features and functions," said an analyst familiar with the announcement. "The [products] coming out from Novell are NetWare-centric."

But a drawback to the Digital offerings, the analyst said, is that corrective commands cannot be issued from the enterprise level down to the client and server level. Therefore, middle managers, like ManageWorks, are needed.

A Digital spokesman confirmed that ClientWorks and ServerWorks will be announced this week but declined comment on product details.

### **Getting ManageWise**

For its part, Novell will announce Version 2.0 of ManageWise at the Enterprise Management Summit in Dallas. The company also is expected to announce plans to lialt stand-alone sales of NetWare Management Service (NMS), its NetWare management product. In the future, NMS will be sold only as part of ManageWise, which blends NMS and Intel Corp.'s LANDesk Manager.

Among other features, ManageWise 2.0 has better support for SNMP-based management platforms such as NetView and OpenView. Rather than simply send-

ing SNMP alerts to enterprise-level managers, the new ManageWise will let SNMP applications browse its Management Information Bases to help third-party applications manage NetWare nets.

'That's better integration than any of the other domain management apps,' said one source close to Novell.

Novell plans to let the software distribution engines in its NetWare Navigator or Intel's LANDesk Manager "snap in" to ManageWise. The new version of Manage-Wise will also be integrated with NetWare Directory Services (NDS), which tracks logon and security information.

That will make it much harder for unauthorized users to access or modify information in ManageWise agents, which reside on servers and send event information to a management console.

ManageWise 2.0 has an improved console linked to NetWare Administration, the tool used to add and modify users in NDS. ManageWise agents will now be able to track historical data, such as CPU usage, to create capacity planning reports and track performance across WANs.

The new console also lets users add objects to ManageWise topographical maps manually and offers more complete workstation performance analysis.

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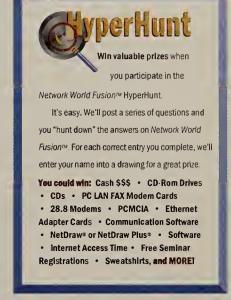
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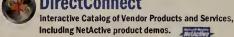
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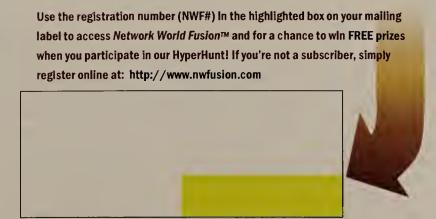
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### AT&T spin-off extends PBX features to LANs

By David Rohde

New York

The new AT&T communications equipment company will come out roaring next Monday with an announcement here of a strategy to link emerging switched Ether-

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net and token-ring networks with private branch exchange systems.

The goal is to provide a platform for real-time collaborative computing applications by extending PBX features, such as call, transfer and conferencing to the LAN.

Key to the strategy of AT&T's Global Business Communications Systems (GBCS) unit will be an immediate announcement of a product that, in some fashion, yokes the LAN infrastructure to AT&T's high-end Definity PBX.

At the same time, GBCS officials will present an Asynchronous Transfer Mode road map.

The moves underscore the spun-off company's intention to be a major player in the data communications market, while retaining the telephone as a key instrument in the future net-

working infrastructure (*NW*, Oct. 16, page 17).

But instead of going it alone, the spin-off—jocularly known as

The goal is to pro-

vide a platform for

real-time collabora-

tive computing

applications by

extending PBX

NATTA, for Not AT&T Anymore — will announce a bevy of partnerships to ensure that users can implement GBCS' new products and technologies within their existing LAN and WAN infrastructures.

Among the partners heatures.

ners known thus far are Bay Networks, Inc., for which de GBCS already resells products; tio Novell, Inc., which has closely collaborated with GBCS for the past three years on computertelephone integration; and for Lotus Development Corp., is which has worked with AT&T to knintroduce Network Notes.

But AT&T executives said several other major players would be involved. They view the upcoming announcement as an

indication that the company is moving well beyond its voice heritage and into PC networking.

"We believe the PC will be the major medium for interaction with other people for real-time and nonreal-time interaction," said Karyn Mashima, vice presi-

dent of Advanced Communications Systems for GBCS.

Data networks today "do not effectively transmit real-time voice and video," she said, and for ATM to deliver on this promise, "it will not be ATM as we know it today." But she conceded that voice switches are not

optimized for high-bandwidth applications.

GBCS executives will address unified network management in their announcement, as well. In this arena, early indications are that Bay users may have an advantage if they also have the Definity voice switch installed. The Definity switch already supports diagnostics through Simple Network Management Protocol on a platform known as OneVision.

"We will start integrating [Bay's] Optivity and OneVision because they both work on [Hewlett-Packard Co.'s] OpenView," said Mashima, a former HP executive.

Although it's a tall order, the new company is likely to push the idea that allowing voice switch features to take charge of data applications can dramatically reduce administrative costs.

Today, six people are required to manage a data network for every one person needed to manage a voice network, Mashima said. ■

### **IBM**

Continued from page 14

vices for quickly deploying departmental data warehouses.

Visual Warehouse is being used by a group at USAir, Inc. to extract data from legacy sources and analyze it in order to respond faster to customer complaints, better manage cabinrelated costs and keep a closer eye on its contract caterers' food quality.

Last week, IBM said Visual Warehouse will be generally available Nov. 17. It also announced lower pricing for corporate customers, plus special pricing and packaging for resellers that want to create ready-torun data warehouses for specific applications or industries.

The data warehouse market is growing fast because it lets MIS groups feed data from various on-line transaction processing systems into a single, consistent, historical database. Armed with query and analysis tools, end users can then analyze the summary data in ways not possible when it is spread among separate databases.

"This is not a laundry list of marketing agreements," said Tim Negris, vice president of marketing for IBM's Software Solutions Division in Somers,

"We invite people to measure our success [in this area] by how easily our tools and our partners' tools install and support each other," he added.

Specifically, the tool vendors

are tying their products into one or more IBM data management tools (see graphic). "We're tightening up this set of middleware [products] so tool vendors and [value-added resellers] can plug into it as a kind of software backplane for their own products," Negris said.

A set of smoothly integrated products in Visual Warehouse was a key benefit for USAir, said John Krupka, administrator for the distributed database group that evaluates new technologies

for the Pittsburgh-based airline.

"I was amazed at how fast we could set it up and install it," he said. "When I think of the warehouses we've built by hand [in the past], to be able to point and click and have the communications all done was amazing."

IBM Website for software: http://www.software.ibm.com.

### IBM's warehouse world

Big Blue's data management portfolio

- DataGuide: A catalog of shared data and information objects, such as reports, spreadsheets and images
- DataHub: Manages both IBM and non-IBM relational databases on a network
- DataJoiner: A common Interface to access multivendor data sources, both relational and nonrelational
- DataPropagator: An administrative tool for copying data among networked databases

### Sprint

Continued from page 1

the earliest possible chance, the data will ride Sprint's backbone to the point closest to its destination.

By keeping packets within the network, Sprint claimed that it will be able to offer users faster and more predictable routing, higher bandwidth and better quality assurance.

Initially available at E-1 (2M bit/sec) access speeds, some of the nodes are expected to have enough traffic within six months to warrant upgrades to E-3 (35M bit/sec), according to Henricus Cox, Sprint's executive director of international carrier services.

The plan calls for nodes in Tokyo; Hong Kong; Sydney, Australia; London; Paris; Stockholm, Sweden; and Moscow, St. Petersburg and Novosibirsk, Russia.

Agreements to establish other nodes in the Middle East and the

subcontinent of Asia will be announced later.

Access will be either through leased lines or frame relay service, the company said.

Some of the nodes, which the company refers to as "routing and peering nodes," are already operational with beta testers, according to Tom Wyrick, executive director of business marketing for Sprint.

Each node is enabled by two Cisco Systems, Inc. 7000 routers connected by dual FDDI rings.

U.S. service provider UUNET Technologies, Inc. and a Japan-based consortium are also believed to be separately planning similar networks, according to a source at Sprint.

In addition to its basic services over the network, Sprint will offer frame relay circuits for users sending large amounts of Internet traffic between two international points.

By having nodes in key Asia-Pacific countries, the network

appears to be part of a movement by telecommunications providers and services providers to break away from the current system of routing intra-Asia Internet traffic through the U.S.

"International bandwidth across the Pacific is congested, and it's crazy to use the U.S. as one big transit center," Cox said.

According to Cox, that is driven by the limited capacity in transpacific cables. For example, it is more efficient for traffic to be aggregated at a node in Tokyo and transported to the U.S.

"We've seen examples where some [Internet access providers] go from needing 2M bit/sec to 45M bit/sec. That is really going to be a crunch because no carriers really have 45M bit/sec across the Pacific just lying around. It's available, but it's never been taken up in chunks that big," he said.

Guth is the Tokyo correspondent for IDG News Service.

# **Back to Reality**

Electronic commerce needs better EDI before it hits prime time

ast week, my wife and I took a long-planned vacation to Key West. So did every rain cloud in North America. Instead of snorkeling, boating and basking in the sun, we sloshed through street-locked rivers on a moped.

The tanned appearance of Floridians is not sunburn — it's rust. Parts of the state got 20 inches of rain in 24 hours. Alligators (not crocodiles, scolded a Floridian) reclaimed flooded neighborhoods. We even missed Key West's tradition of "clap-



David J. Buerger

ping down" the sun before dusk. Despite careful planning, some things do not turn out as expected.

Electronic commerce is a good example. Forget about the World-Wide Web, browsers and cybercash. That's future stuff, fit for a day when consumers shift our national pastime from shopping in malls to shopping from PCs.

Business-to-business electronic commerce, however, is booming via electronic data interchange. According to GE Information Services (GEIS), about 100,000 companies worldwide use EDI.

EDI is a series of standards that permit companies to electronically exchange the documents and data used to do business. EDI software translates application data into a standard format and ships it off to a trading partner's computer.

The benefits of EDI are cost savings through a dramatic reduction in paperwork plus faster processing. Manufacturing, purchasing, shipping logistics, invoicing and payments can move at light speed.

Sounds simple. But the reality is far more complicated.

#### **Dueling standards**

EDIFACT, the international EDI standard — which is sponsored by the United Nations — is a typical U.N. acronym meaning EDI for Administration, Commerce and Transport.

Americans, of course, got tired of waiting for the EDIFACT committee to make up its mind concerning changes to the standard. ANSI's X.12 standard bulwarks most EDI-based electronic commerce in the U.S.

About 40% of data elements overlap between EDIFACT and X.12 — except those that are specific to the retail, financial, health care, automotive, apparel and merchandising industries. There-

fore, international interoperability is poor.

This week, the Department of Defense (also an EDI user) will announce a

technical recommendation that will practically blend EDIFACT and X.12. The recommendation stems from a study by the CALS initiative.

CALS, like most government-sponsored initiatives, can't decide what to call itself. The acronym's original definition was Computer-aided Acquisition and Logistics Support. That evolved to Continuous Acquisition Lifecycle Support. Commercial users call it Commerce At Light Speed, but it's hard to say if they're pulling our leg.

The study pitches the use of a standard E-commerce data dictionary and low-cost SQL database parsers, which would funnel data into the EDI syntax that's appropriate for a particular partner.

It's a good proposal; the idea could cut out years of wrangling between X.12 and EDIFACT. Chalk one up to another victory of technology over ego.

Unfortunately, the Department of Defense's plan does little to solve a bigger problem: making it easier for small companies to use EDI.

No question, EDI is hard to use. A typical implementation between a large vendor and one of its suppliers can take three months. Consultants love this type of messy work. The complexity has thwarted use by small suppliers, many of which can

barely use computers.

Even large vendors are lucky to get 35% of their suppliers to do business using EDI. Hand-holding and paperwork for the balance remain a big drain on resources and productivity.

GEIS, which is one of the largest EDI service providers, recently said it will create "EDI for the masses" using The Microsoft Network. The plan's first iteration will be released by March.

EDI over The Microsoft Network will initially be limited to small companies exchanging data with GEIS' regular EDI customers. If a company wanted to do EDI with Nordstrom, for instance, it would click on Nordstrom's Windows 95 icon and fill in presupplied electronic forms. Integrators could make that link transparent to a small-business accounting system.

Electronic commerce technology requires much work before it can pervade our culture. Perfecting the back-end operations first is a tangible goal that can provide immediate benefits. Ignoring this aspect could make plans for electronic commerce as successful as our wet vacation in Florida.

Buerger is an Atlanta-based writer and industry consultant. He can be reached at dbuerger@pipeline.com.

## **CyberSpeak**

Voices from the reader network

#### **NEXT QUESTION**

Is Cisco stretching itself too thin with all its acquisitions?

Responses due by 8 p.m. Thursday, Nov.2. You'tt get a T-shirt if we print your response. Ptease include your name, title, company and address.

### ${\it Can\,Microsoft\,conquer\,the\,Internet\,market?}$

"Microsoft will create a true market for the Internet. Microsoft has the capital and resources to finally put some organization into the Internet. There will be a lot of opposition to this because the Internet has been so loosely maintained. Also, Microsoft has the ability to bring a commercial aspect to the Internet, and this will appeal to the people that are not Unix power users but are interested in using the Internet for practical purposes."

Matt Childs, IS supervisor, Fritz Cos., Anchorage, Alaska

"There is a sense of freedom in the air—the current market provides consumers with competitive choices—and, for once, Microsoft hasn't bullied its way to dominance. Consumers are becoming less than supportive of the presence of Microsoft in every market. Microsoft may establish a place for itself here, but it will not be widely embraced."

Shere Macumber, systems analyst/AVP, Crestar Bank, Richmond, Va.

"No, the Internet is way bigger than Microsoft. Microsoft can be a player, but there is no way it can take over. If one company dominated it, the Internet wouldn't be a community. Have you seen Microsoft Money? It just doesn't compete with Quicken, and that's Microsoft's client entry into electronic commerce." Mark Hawkins, network manager, Augusta Paper Co., Augusta, Ga.

"Microsoft definitely has a shot at it. The company has the power and the market presence, and is gaining speed down the information highway."

Steven Bonici, systems administrator, Etlenne Aigner, Inc., Edison, N.J.

NEXTWEEK: Don't miss "Abend," our back-page column that alternates with "CyberSpeak" and brings you humorous items, oddities, marginalia and other insights from the Internet and elsewhere. Send items to network@world.std.com or get in touch with us any other way listed on page 5.

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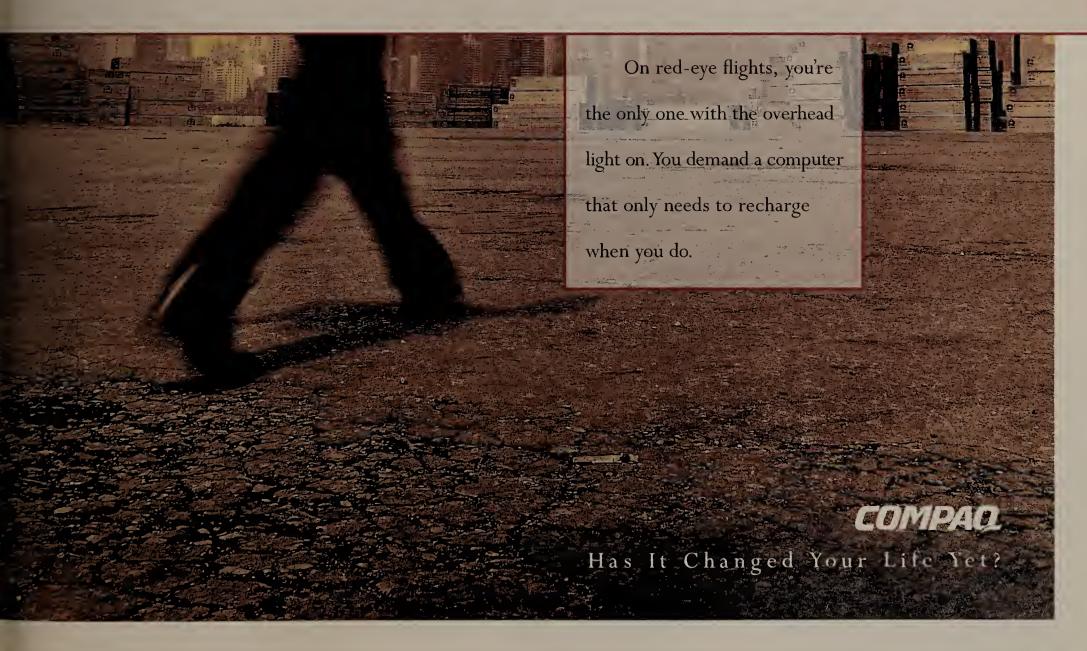
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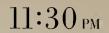


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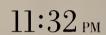




Firm's working late on big project. Network's humming along.

### 11:31 PM

Weird sounds from printer interrupt your bliss.



Realize you never learned those words in fourth-year French.

### 11:33<sub>PM</sub>

But you have IBM printers. You get IBM service.

### 11:59<sub>PM</sub>

They translate over the phone. Printer's saying, "Refresh my memory."

### $12:07_{AM}$

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